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NAVAL POSTGRADUATE SCHOOL

MONTEREY, CALIFORNIA

MBA PROFESSIONAL REPORT

An Acquisition Leader's Model for Building Collaborative Capacity

**By: Louis M. Bauer
Marc M. Meeker
December 2011**

**Advisors: Gail Thomas
Michael Boudreau**

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**AN ACQUISITION LEADER'S MODEL
FOR BUILDING COLLABORATIVE CAPACITY**

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Submitted in partial fulfillment of the requirements for the degree of

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from the

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AN ACQUISITION LEADER’S MODEL FOR BUILDING COLLABORATIVE CAPACITY

ABSTRACT

This report begins by defining collaboration. Next, the report provides examples of how effective collaboration within the Department of Defense’s (DoD) acquisition community is lacking. Based on these examples, the project asks its main research question: “How can DoD acquisition leaders improve their collaborative capacity to improve cost, schedule and performance?” Next, the project provides a model for how to do just that. The project, “An Acquisition Leader’s Model for Building Collaborative Capacity” presents a three-step model. Step one is to assess and analyze collaboration capacity with regard to the elements of one’s own organization, the organization’s stakeholders, and the network (or the relationships between stakeholders). Next, based on the analyses from step one, step two calls for making plans to improve collaboration capacity, again, along the same elements previously analyzed: one’s organization, stakeholders, and the network. Lastly, the model calls for executing the plans made in step 2. This process is repeated until the desired collaboration capacity has been reached. Last, the project provides a detailed hypothetical example of how the model can be applied.

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LIST OF ACRONYMS AND ABBREVIATIONS

ACAT	Acquisition Category
AMC	Army Materiel Command
ASAALT	Assistant Secretary of the Army, Acquisition, Logistics and Technology
DASC	Department of the Army Systems Coordinators
DoD	Department of Defense
GAO	Government Accountability Office
HTJ	Hocevar, Thomas and Jansen
ICC	Interagency Collaborative Capacity
ICDT	Integrated Capabilities Development Team
IOC	Inter-Organizational Collaboration
IPT	Integrated Product Team
JCIDS	Joint Capabilities Integration and Development System
LRIP	Low Rate Initial Production
LTG (R)	Lieutenant General Retired
MOA	Memorandum of Agreement
MOE	Measures of Effectiveness
MOP	Measures of Performance
PEO	Program Executive Office
PM	Program Manager / Product Manager
PM-AG	Program Manager Ammunition for Gun
PM-GUN	Program Manager Gun
R&D	Research and Development
SPO	System Program Office
T&E	Test and Evaluation
TDP	Technical Data Plans
TFX	Tactical Fighter Experimental
TRADOC	Training and Doctrine Command

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Thoughts on Collaboration

“The successful operation to eliminate Osama bin Laden was an example of the military and intelligence community working together.” - *Leon Panetta*

“It is the long history of humankind (and animal kind, too) those who learned to collaborate and improvise most effectively have prevailed.” - *Charles Darwin*

“If you have an apple and I have an apple and we exchange these apples then you and I will still each have one apple. But if you have an idea and I have an idea and we exchange these ideas, then each of us will have two ideas.” - *George Bernard Shaw*

“Coming together is a beginning, staying together is progress, and working together is success.” - *Henry Ford*

“The achievements of an organization are the results of the combined effort of each individual.” – *Vince Lombardi*

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I. INTRODUCTION

This introduction defines collaboration and we highlight some of the historical problems stemming from a lack of collaboration within the Department of Defense (DoD) acquisition arena. Next, we present our research questions. Then, we describe the theory that we use to answer our research questions. Finally, we lay out the limitations and scope of this study.

A. DEFINITION OF COLLABORATION

The dictionary defines collaboration as “cooperating with an agency with which one is not immediately connected (“Collaboration,” 2011). Within the field of organizational behavior the generally agreed upon definition of collaboration is as follows:

Most robust (and commonly cited) seems to be found in Barbara Gray’s *Collaborating: Finding Common Ground for Multiparty Problems*. She describes collaboration as a ‘process through which parties who see different aspects of a problem can constructively explore their differences and search for solutions that go beyond their own limited vision of what is possible.’ (London, 1995, p. 2)

Adding to the concept of collaboration is the idea that it “is a mutually beneficial relationship between two or more parties who work toward common goals by sharing responsibility, authority, and accountability for achieving results” (Larson, 1994, p. 5).

B. HISTORICAL COLLABORATION PROBLEMS

As we will see in the next section, within the DoD acquisition community the idea of “mutually beneficial” collaboration runs into a harsh reality. A bureaucratic acquisition process and territorial institutions can often hamper collaboration and effectiveness. Historical collaboration Problems

In today’s organizations, collaboration can be improved. Reports highlight the lack of effective collaboration amongst DoD acquisition programs. The following examples help highlight the problems stemming from a lack of effective acquisition collaboration.

1. Tactical Fighter Experimental

In the early 1960s, under then Defense Secretary McNamara, the Navy and Air Force were directed to collaborate on development of the Tactical Fighter Experimental (TFX) because of perceived similarities in requirements. The goal of the program was cost savings through commonality. The Navy was theoretically a 50% partner in the joint program. However, with McNamara placing the Air Force overall in charge, the Navy was less than enthusiastic about the program: The Navy's degree of commitment to the program came to be expressed in a rather subtle way: it would send a minimal number of Navy personnel to participate in the direct government management of the program at the Air force's System Program Office (Bower, 1978, p. 58). The lack of collaboration, at least in part, doomed the program to failure (Bower, 1978).

2. Army Acquisition Review (2010)

The Secretary of the Army chartered a study of the Army Acquisition process in 2011. The report found that collaboration shortfalls were an issue, and notes that there are consequences to not collaborating.

This lack of a collaborative approach to requirements development results in a current mean time for approval of an ACAT I requirements document of 15 months. The average time for ACAT II systems is 22 months, and for ACAT III systems it is 18 months (Secretary of the Army, 2011, p. xii). Further, the report highlights one of the root causes of a lack of collaboration, stating that there is no authority to enforce collaboration, and that collaboration efforts are purely voluntary: Army Regulation (AR) 71-9 provides for collaborative requirements development with an Integrated Capabilities Development Team (ICDT). Unfortunately, TRADOC has no authority to require participation, but can only "invite" those who choose not to participate and will later critique the requirement. (Secretary of the Army, 2011, p. xii)

C. RESEARCH QUESTIONS

As we have shown through the examples in the previous section, a lack of collaboration can negatively affect acquisition programs. These representative examples led us to forming our overarching research question: "How can DoD acquisition leaders improve their collaborative capacity to improve cost, schedule and performance?" This basic research question in turn leads to five subsequent questions:

- 1) Why should leaders choose to collaborate in the first place?
- 2) What is the leader's role in collaboration?
- 3) How do acquisition leaders measure and improve their own organization's collaborative capacity?
- 4) How can acquisition leaders analyze and improve relationships with key stakeholders?
- 5) How can acquisition leaders manage the "stove piped" acquisition system's network?

D. INFORMED FOUNDATION

In attempting to answer our research questions, we use the following works to aid us in forming our model, *An Acquisition Leader's Model for Building Collaborative Capacity*.

Galbraith's article, entitled "Star Model" is useful in evaluating an organization's collaborative capacity along the variables of strategy and purpose, structure, lateral processes, rewards systems and people (Galbraith, 2011).

The work by Hocevar, Thomas and Jansen references an established vocabulary and metrics for organizations to use in evaluating their internal collaborative capacity.

Milward and Provan define models and vocabulary used to describe networks. This allows leaders to identify what type of network they are a part of and helps determine appropriate actions to improve the network (Milward & Provan, 2006).

O'Toole's report, "Treating Networks Seriously: Practical and Research-Based Agendas in Public Administration" is a useful reference for further defining the different types of networks and associated vocabulary (O'Toole, 1997).

Provan and Milward indicate that there are three modes of network governance: self-governed network, lead organization network and, network administrative organization (Milward & Provan, 2006). This is valuable to us in defining what tasks leaders should do within networks.

Savage, Whitehead and Blair's report on "Strategies for Assessing and Managing Organizational Stakeholders" is incorporated into our model because of its value in

understanding the stakeholders and the relationships that lay the groundwork for networks. Savage lays out four basic types of stakeholders and what actions should be taken to deal with these stakeholders based on their type (Savage, Nix, Whitehead, & Blair, 1991).

E. RESEARCH PROJECT OBJECTIVE AND SCOPE

The objective of this project is to draw on various collaboration theories, models and tools to improve future DoD acquisition collaborative capacity. The ultimate goal of improving collaboration is to improve the DoD acquisition process as measured by cost, schedule, performance, and management of risk. Future acquisition leaders may read this document and gain insight into improving acquisition collaborative capacity.

The report's scope is limited to suggesting one of many potential ways to improve collaborative capacity. The authors recognize that there is more than one way to improve collaboration. However, for a reader unfamiliar with the large body of work that exists on improving collaborative capacity, this report may provide a clear method for improving collaboration.

II. AN ACQUISITION LEADER'S MODEL FOR BUILDING COLLABORATIVE CAPACITY

This chapter begins with asking the question, “Is collaboration needed in the first place?” Next, we stress the overarching importance of leadership in improving collaboration. We give a brief introduction to the model, entitled “An Acquisition Leader’s Model for Building Collaborative Capacity.” The subsequent sections explore the model in depth and tie in references to existing bodies of work. The chapter concludes with a figure of the model, which highlights in one diagram the entire model’s basic concepts.

A. IS COLLABORATION NEEDED IN THE FIRST PLACE?

Before attempting to improve collaboration, a leader of an organization should ask himself the first of our first questions, “*Is collaboration needed in the first place?*” If a leader controls enough resources, has all the answers and has all the right people working for him, then the need to collaborate with outside agencies will be low. Further, if the leader’s organization is part of a serial or factory process that takes inputs, does work and produces an output, then there is little need to collaborate. Work is simply accomplished and passed along.

However, if a leader must work with agencies that are out of his direct control then a need to collaborate exists. As was noted in our introduction, most acquisition processes require collaboration but are rather sequentially executed. The report on the status of Army acquisition reiterates the point that acquisition should be inherently collaborative:

The Assistant Secretary of the Army, Acquisition, Logistics and Technology (ASAALT), PEOs and Army Materiel Command (AMC) have a broader mission and capabilities than just procurement of products and services. Yet, the Army acquisition community is too frequently viewed by the requirements development community and Congress as ‘shoppers’ for materiel. This is indicative of the mindset that the warfighter writes the requirement, the G-3 validates and prioritizes the requirement, the G-8 and the Comptroller resource the proposed program and it is the job of the acquisition community to ‘shop’ for the best source to meet the need. This serial approach is counter to the collaborative

development of requirements by the combat developer and resource and acquisition professionals. (Secretary of the Army, 2011, p. 32)

In other words, there are separate organizations within the acquisition community, and collaboration is needed to work across organizational boundaries in most cases.

In conclusion, a leader must ask himself if collaboration is needed in the first place. In some rare cases within the acquisition community, there may be no need to collaborate if the leader controls every step in the process. However, in most cases in the acquisition system, there is a need to collaborate across organizational boundaries.

B. IMPORTANCE OF LEADERSHIP

This section seeks to answer the research question, “What is leadership’s role in collaboration?”

Leadership is the process of influencing people by providing purpose, direction, and motivation while operating to accomplish the mission and improving the organization. (Department of the Army, 2006, p. 1–2)

While this definition of leadership is a good one in general, we need one that more precisely describes the collaborative nature of acquisition. As we previously noted, acquisition leaders rarely have direct control of all the resources they need to bring a system into existence and sustain it. Acquisition leaders cannot simply bark orders and get results. Acquisition leaders likely must lead through influencing people in different agencies. To do so acquisition leaders must determine a mutual goal, and thereby benefit through collaborative efforts. This concept is articulated further by Brungardt:

Today scholars discuss the basic nature of leadership in terms of the ‘interaction’ among the people involved in the process: both the leaders and the followers. Thus leadership is not the work of a single person, rather it can be explained and defined as a ‘collaborative endeavor.’ (Brungardt, 2011, p. 2)

Another advocate for building collaborative capacity as a leadership trait is LTG(R) Joseph Yakovac, former military deputy to the Army Under Secretary of Defense for Acquisition Logistics and Technology who states:

A program manager is a leader with a broad technical background who simultaneously manages the program...with an industry partner while

forming strategic alliances with appropriate government commands, staffs and agencies to provide 2nd to none war fighting capabilities. (Yakovac, 2011)

It is clear that the need to collaborate or build ‘strategic alliances’ requires leadership’s attention at the highest levels of the acquisition community.

The will to ‘interact’ among different agencies comes from the leader’s ability to sell the idea that working together is in everyone’s interests. One important way of demonstrating a shared goal is to build trust with other agencies.

Forming effective teams is often the first challenge of a leader working outside a traditional command structure. Without some measure of trust, nothing will work as well. To establish trust, the leader will have to identify areas of common interests and goals. Trust between two people or two groups is based largely on being able to anticipate what the others understand and how they will respond in various situations. Keeping others informed also builds trust. Cementing and sustaining trust depends on following through on commitments. (Department of the Army, 2006, p. 7–12)

Considering the above points, leadership and trust are important in improving collaboration. Without leadership there will likely not be as much emphasis on collaboration.

However, as we will see in the next chapter, the mere notion of leadership does not automatically improve collaboration. A methodology to adequately measure and define collaboration issues for the purpose of marked improvement is needed. The purpose of this report seeks to explore systematically and holistically the different aspects of improving collaboration. Throughout this exploration it is critical to remember that leadership is critical to all aspects of improving collaboration.

C. OVERVIEW OF MODEL

This portion of the report provides a broad overview of our model, which is appropriately titled “An Acquisition Leader’s Model for Building Collaborative Capacity.” At the most basic level the model has three steps for improving collaborative capacity: 1) Assess and Analyze, 2) Plan, and 3) Execute. At the completion of the third step, the process is repeated as necessary. These three steps are derived from Boyd’s

“Observe, Orient, Decide and Act” model. As Boyd explains, “orientation shapes observation, shapes decision, shapes action and in turn is shaped by feedback” (Hammond, 2004). In essence our model follows the same logic.

Step one assesses and analyzes collaboration and organizational effectiveness factors. The concept is that first we must gather data and then analyze it in order to discover factors that are affecting our ability to collaborate and ultimately be effective as an organization. The details of what data should be measured will be explained later in greater detail. For now it is worth noting that the data assessed and analyzed should be both qualitative and quantitative. This should be a disciplined data gathering step and not a haphazard sampling.

Step two uses the data analysis from step one to develop a plan of action for dealing with identified variables that affect collaboration. As with the initial analyzed data, the goal here is to improve collaborative effectiveness. Boyd (2004) noted that what is observed will shape the plan, and by gathering quantifiable and qualitative data in step one, we establish a benchmark that serves as a start point for the planning step. This allows us to establish goals related to improving weak areas affecting collaborative capacity, while capitalizing on strong areas. During step two, we also develop plans for how to improve in measurable, incremental ways, so that after the plan is executed (step three) we can compare before and after results to see if the plan for improvement has worked or failed, and make adjustments accordingly.

Step three is simply an execution of the plan drawn up in step two. The actual time that it takes to implement the plan will depend entirely on the scope of the plan and goals sought. After step three, we return to step one to assess and analyze our executed plan. The process is repeated until goals are attained.

1. Three Elements to Building Collaborative Capacity

The model has three elements that address the three of our research questions: 1) the organization, 2) the stakeholders, and 3) the network. Each of these elements will be explored in detail.

a. *Organizations as Elements*

First, and most importantly, we look at organizations through the eyes of Galbraith's "Star Model" (Galbraith, 2011). Galbraith explains that leadership and design policies of an organization fall into five categories: 1) strategy, 2) people, 3) structure, 4) rewards, and 5) processes. As we will see later, using these five variables, we can assess and analyze any organization and its collaborative capacity.

b. *Stakeholders as Elements*

Aside from the organization itself, any party that has a stake in the organization's business is likely to have some degree of influence, which can be either positive or negative. Analyzing stakeholders is critical in building collaborative capacity because stakeholders represent the interested parties that will implement, improve, and benefit from that collaboration. We first look at each stakeholder *individually*. We use Savage's work as a tool for assessing stakeholders (Savage, Nix, Whitehead, & Blair, 1991). As Savage notes:

Stakeholders include those individuals, groups, and other organizations who have an interest in the actions of an organization and who have the ability to influence it. (Savage, Nix, Whitehead, & Blair, 1991, p. 61)

Later, under network analysis, we will examine the relationships *between* stakeholders.

c. *Networks as Elements*

The organization and stakeholders interact in a synergistic way to accomplish a set of predetermined goals, often with outside organizations as well. This synergy is known simply as a network, more specifically defined as, "structures of interdependence involving multiple organizations or parts thereof, where one unit is not merely the formal subordinate of the others in some larger hierarchical arrangement" (O'Toole, 1997, p. 45). We use networks as a third and final variable in our model. It is an important variable to examine how the interdependence of organizations affects collaboration. Network analysis helps with improving collaboration because it examines which organization has relative power compared to other organizations within the

network. Further, this step helps leaders understand what types of networks exist and what type of leadership is most effective, based on which network one's organization is in or should be in.

d. Figure of Model

Figure 1. Overview of Model Developed by Authors summarizes our model for building collaboration. The diagram may serve as a useful, quick reference for the model's basic structure and concepts, but is not meant to provide all the details of the model.

An acquisition leader's model for building collaborative capacity

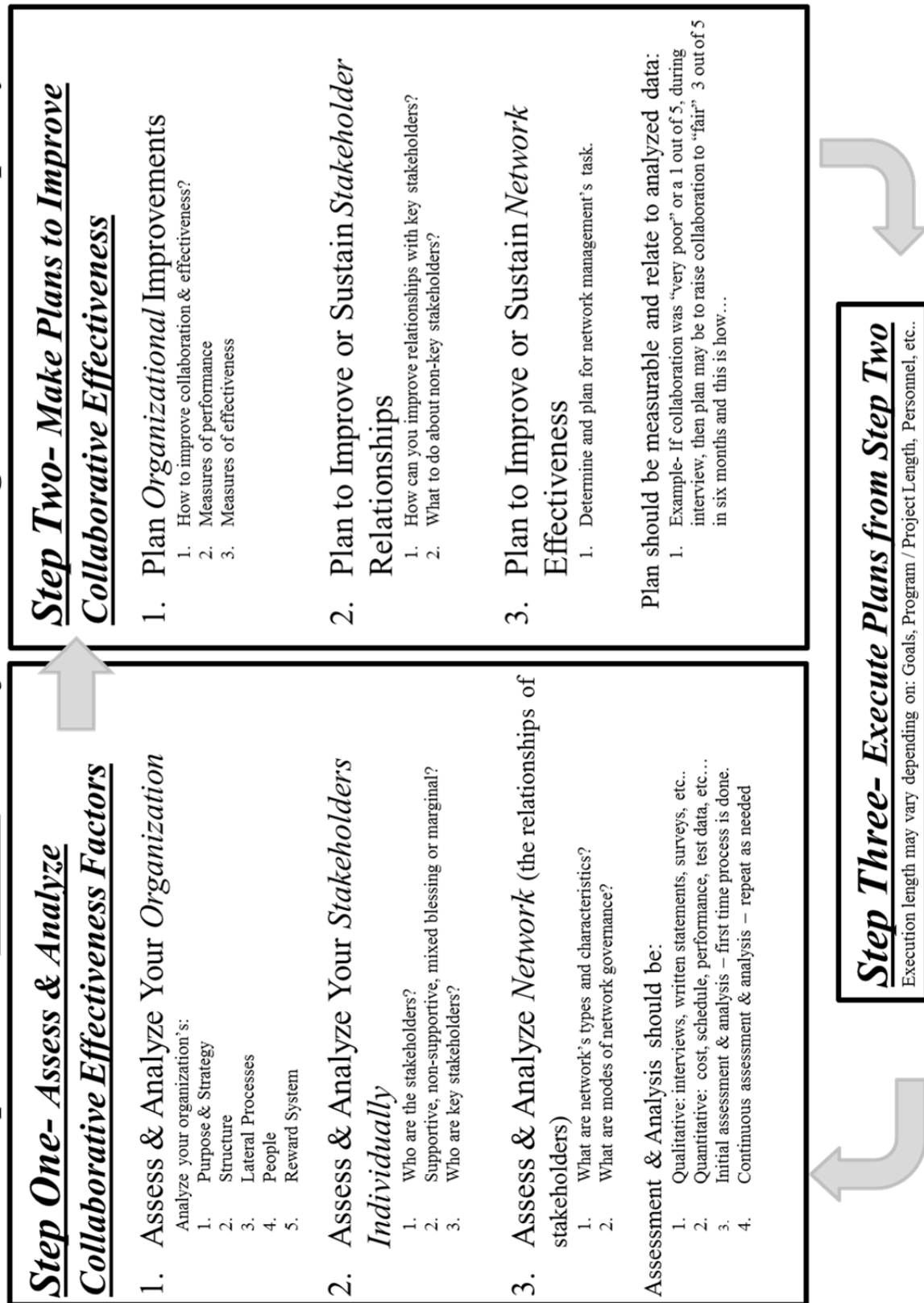


Figure 1. Overview of Model Developed by Authors

D. STEP 1 - ASSESS AND ANALYZE COLLABORATIVE CAPACITY

1. Assess and Analyze Your Organization

a. *Star Model of Organizations*

A good model for what and how leaders should systematically assess and analyze any organization (either theirs or others) is Galbraith's Star Model (Galbraith, 2011). This model for organizational analysis has five categories in which leadership can influence employee behavior. The five categories are 1) strategy, 2) structure, 3) processes, 4) rewards, and 5) people. These factors are represented in Figure 2.

Galbraith's Star Model. The model is arranged as a star to depict the complex interplay of these variables.

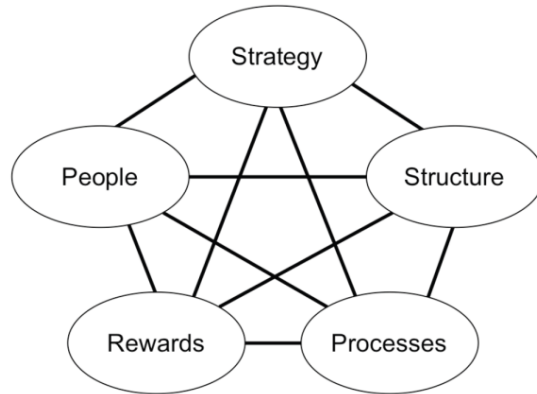


Figure 2. Galbraith's Star Model (Galbraith, 2011)

Galbraith's Star Model can be easily explained: A leader's strategy represents goals, objectives and mission, while structure determines the placement of power and authority within an organization. Horizontal processes are the work flow. Rewards align the goals of the employees with the goals of the organization. People within an organization are governed by human resource policies.

Galbraith's Star Model shows that these five factors affect an organization's success. We will use the Star Model to explore how organization factors affect collaboration.

b. Interagency Collaborative Capacity Model

Hocevar, Thomas and Jansen (2006) build on Galbraith's Star Model as a way of assessing and improving inter-agency collaborative capacity. As noted in the Star Model, the design of an organization has five factors and those factors also determine the organization's capacity for interagency collaboration. Hocevar, Thomas, and Jansen use the Star Model to offer "a systematic diagnosis of organizational factors that both enhance and impede collaboration, while also guiding action toward improved collaborative capacity" (Hocevar, Thomas, & Jansen, 2006, p. 259). They define collaborative capacity as "the ability of organizations to enter into, develop, and sustain inter-organizational systems in pursuit of a collective outcome" and acknowledge that a capacity for collaboration enhances the probability of mission completion by leveraging dispersed resources.

Hocevar et al show that the Star Model's five organizational design components 1) strategy, 2) structure, 3) processes, 4) rewards, and 5) people can be tied to collaboration in terms of "success" factors and in terms of "barrier" factors:

Each component of the Star Model makes a unique contribution to inter-organizational collaboration – either contributing to successful interagency collaboration or creating barriers to it. (Hocevar, Thomas, & Jansen, 2006, p. 5)

The following table summarizes Hocevar et al. linkages between the Star Model's organizational design components and different collaboration success or barrier factors. In seeking to improve collaboration, leaders should try to increase the "success" factors and decrease the "barrier" factors. Note that from their study the factors in bold accounted for at least 25% of the respondent's answers.

Organization Design Component	“Success” Factors	“Barrier” Factors
Purpose and strategy	<ul style="list-style-type: none"> • “Felt need” to collaborate • Common goal or recognized interdependence • Adaptable to interests of other organizations 	<ul style="list-style-type: none"> • Divergent goals • Focus on local organization over cross-agency (e.g., regional) concerns • Lack of goal clarity • Not adaptable to interests of other organizations
Structure	<ul style="list-style-type: none"> • Formalized coordination committee or liaison roles • Sufficient authority of participants 	<ul style="list-style-type: none"> • Impeding rules or policies • Inadequate authority of participants • Inadequate resources • Lack of accountability • Lack of formal roles or procedures for managing collaboration
Lateral mechanisms	<ul style="list-style-type: none"> • Social capital (i.e., interpersonal networks) • Effective communication and information exchange • Technical interoperability 	<ul style="list-style-type: none"> • Lack of familiarity with other organizations • Inadequate communication and information sharing (distrust)
Incentives	<ul style="list-style-type: none"> • Collaboration as a prerequisite for funding or resources • Leadership support and commitment • Absence of competitive rivalries • Acknowledged benefits of collaboration (e.g., shared resources) 	<ul style="list-style-type: none"> • Competition for resources • Territoriality • Organization-level distrust • Lack of mutual respect • Apathy
People	<ul style="list-style-type: none"> • Appreciation of others’ perspectives • Competencies for collaboration • Trust • Commitment and motivation 	<ul style="list-style-type: none"> • Lack of competency • Arrogance, hostility, animosity

Table 1. Factors Affecting Inter-organizational Collaboration (Hocevar, Thomas, & Jansen, 2006, p. 260)

c. Interagency Collaborative Capacity Measurement

Now that we have a model for understanding organizations and organizational collaboration factors, we can use it to measure, in both a qualitative and quantitative way, an organization’s collaborative capacity. This measure gives us the baseline from which we can develop future plans for collaboration improvement.

Measuring collaborative capacity can be done in multiple ways. One option is to do a self diagnosis of collaborative capacity, which can be measured solely from an organization's general point of view; that is, internally looking at one's own organization's collaborative capacity without regard to any external organization.

A second way of measuring collaborative capacity can be done with regards to one's organization and the relationship it has with one or more separate organizations. When possible and practical, we recommend measuring collaborative capacity with regards to key stakeholders. That is, collaboration factors should be measured with key stakeholders where teamwork is needed to accomplish the mission. Stakeholders who have a marginal and unimportant role in the success of one's mission should carry little weight when measuring collaborative capacity. More detail will be provided on assessing and analyzing stakeholders in a subsequent section on stakeholder analysis. For now it is worth remembering that collaborative measurement capacity should be focused on important stakeholders.

Regardless of whether measuring collaborative capacity internally or with key stakeholders, using a survey to interview workers is a good way of measuring collaborative capacity. An example of a survey that could be used to assess collaborative capacity is provided in Appendix A. Further, an additional example of a survey acquisition leaders could use to measure collaboration capacity can be found in Kirschman and Laporte's *An Assessment of Collaboration Capacity of Three Organizations within Defense Acquisition* (LaPorte, 2008, pp. 65–75).

2. Assess and Analyze Your Stakeholders

This section explains why stakeholder analysis should be done at all. Next, we look at different types of stakeholders. Finally, we describe key stakeholders and the importance of ranking stakeholders.

a. Why Stakeholder Analysis?

This section explains how and why stakeholder assessment and analysis helps in building collaborative capacity. First we will show how stakeholders are analyzed individually. Then we show how relationships of stakeholders are analyzed within a network.

This process uses Savage's, "Strategies for Assessing and Managing Organizational Stakeholders." As Savage notes,

To cope with the environmental turbulence and uncertainty facing many U.S. industries, business executives must effectively manage their stakeholders. Stakeholders include those individuals, groups, and other organizations who have an interest in the actions of an organization and who have the ability to influence it.

In using Savage's definition of "stakeholder" we use the term in the broadest sense: any individual, group, organization that can affect the acquisition manager, be a provider, or benefit from the enterprise is a potential stakeholder. Examples of different stakeholders include but are not limited to:

- The President
- Secretary of Defense / Under Secretaries
- Unified Combatant Commands
- Joint Task Forces
- Service Chiefs / Staffs
- Congress / Committees / Sub-Committees
- GAO and other investigative entities
- JCIDS process / Joint Requirements
- Training and Doctrine Commands
- "Users" / "User Community" / soldiers
- Research and Development Military Commands
- Modeling and Simulations organizations
- Civilian Academic Research Programs
- Test and Evaluation Organizations (developmental / operational)
- Contract Support entities / Small Business Advocates
- Defense Contract Management Agency
- Defense Contract Audit Agency
- Defense Contractors
- Materiel Commands
- DoD Logistic Agencies / Depots / Intermediate support entities
- Human-Systems Integration organizations

- Systems Commands
- Transportation Commands
- Safety organizations
- Program Executive Offices, Program Managers, Product Managers
- Personnel Commands
- Intelligence Commands
- Budgeting entities
- Civilian and military judicial system
- Tax payers
- Media
- Watchdog groups
- Foreign military sales

It is incumbent upon the Program Manager and the organization's key leaders to brainstorm potential stakeholders, even though brainstorming the entire list of all possible stakeholders can be a time consuming task. This is a worthwhile task to do because an unidentified stakeholder could potentially derail an acquisition program. By identifying stakeholders beforehand, the acquisition program manager will decrease his chances of being blindsided later.

b. Stakeholder Types

After brainstorming all potential stakeholders, the next step is to quantitatively and qualitatively assess and analyze them. We use Savage's "Stakeholder Types" to categorize stakeholders into four areas: mixed blessing, supportive, marginal and non-supportive. These four types of stakeholders are further explained below in

Figure 3. Stakeholder Types (Savage, Nix, Whitehead, & Blair, 1991, p. 65).

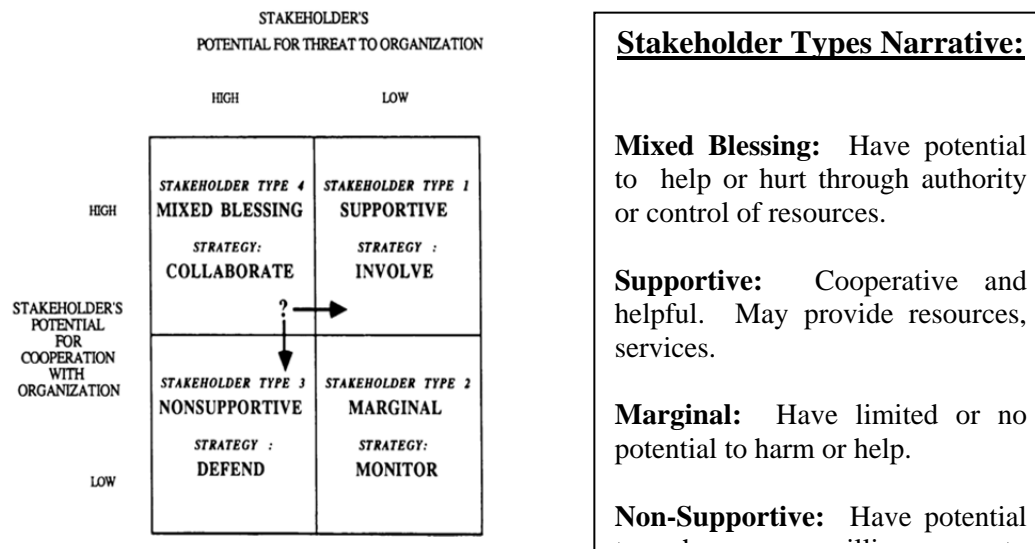


Figure 3. Stakeholder Types
(Savage, Nix, Whitehead, & Blair, 1991, pp. 65–66)

By categorizing each stakeholder into one of Savage’s four categories, we then know what actions we should take with regards to that particular stakeholder. Mixed blessing stakeholders have the potential to help or hurt our mission through authority or control of resources. The arrows in

Figure 3. Stakeholder Types, indicate that we should try to convert the mixed blessing stakeholder (ideally) to a supportive stakeholder. However, if we cannot convert the stakeholder to a supportive role, then we should defend against their power. Obviously, we should involve supportive and cooperative stakeholders in our collaboration efforts. Those stakeholders that have a high potential for threat to our organization and that also show a low potential for cooperation should be defended against. Marginal stakeholders have a limited potential to threaten or cooperate and thus should be monitored, but not with any significant amount of time consuming effort (Savage, Nix, Whitehead, & Blair, 1991, pp. 65–66).

c. *Key Stakeholders*

Beyond simply categorizing in accordance with Savage’s model, each stakeholder may be analyzed in terms of power to determine whether they are a “key stakeholder.” As noted, the acquisition leader often must deal with a large number of

stakeholders. Merely labeling the whole host of assorted stakeholders into one of the four of Savage's stakeholder types may still leave the acquisition leader with a large and unmanageable list of stakeholders. That is the reason for identifying *key stakeholders*: these key stakeholders are the most critical to mission success.

For example, the President of the United States in theory may be a supportive stakeholder. However, in reality the President does not have the time to be involved with the daily business acquisition leaders face. Thus, even though the President may be a supportive stakeholder, he is likely not a key stakeholder. Conversely, requirements writers could be either a mixed blessing, supportive or non-supportive stakeholder. Regardless of their type, early in the acquisition process their input is generally regarded as very important and thus they should carry the additional label of "key stakeholder."

There are many methods for prioritizing stakeholders. One method is to number stakeholder's criticality to mission success; with 1 being the most critical stakeholder and going to N numbers, ranking all your stakeholders. This approach allows the acquisition leader to systematically identify the most and least important stakeholders. The benefit of this approach is it makes leaders think about who is actually the most important stakeholder and who is the least important. Each situation will likely be unique in rating stakeholders. Variables such as: power, criticality, interests, influence, shared needs, risks, organizational culture all come into play in ranking stakeholders importance. The point here is that the variables must be thought through in order to create an intelligent ranking.

Up to this point in stakeholder analysis we should have a list of stakeholders, each classified and possibly labeled as a key stakeholder. Table 2 demonstrates a method of basic stakeholder analysis.

Rank	Stakeholder	Type	Key Stakeholder
1	Training and Doctrine Command	Non-Supportive	Yes
2	Research and Development Agencies	Supportive	Yes
3	DoD Test and Evaluation Organization	Marginal	Yes
4	Contract Support Agencies	Mixed Blessing	Yes
5	Defense Contractors	Mixed Blessing	Yes
6	Service Chiefs / Staffs	Mixed Blessing	
7	Secretary of Defense	Mixed Blessing	
8	Congress / GAO / Sub-Committees	Mixed Blessing	
9	Media	Mixed Blessing	
10	Watchdog groups	Non-Supportive	
11	Tax Payers / Civilian	Marginal	
12	Civilian and Military Judicial system	Mixed Blessing	
13	Foreign Military Sales	Marginal	
14	The President	Supportive	

Table 2. Hypothetical Stakeholder Analysis

In this short hypothetical example, we see that we have shortened our unmanageable list of many stakeholders down to five key stakeholders: Congress, Training and Doctrine Command, Research and Development, Contract Support and Defense Contractors. This additional analysis allows the acquisition leader to focus on a few critical stakeholders and makes the following step more manageable.

d. More Qualitative and Quantitative Analysis of Key Stakeholders

If the acquisition leader identifies key stakeholders (as described in the previous section), then the survey (Appendix A) can be more effective and efficient. Thus, the focus of the survey is *only with regards to key stakeholders*. This focuses assessment and analysis of collaborative capacity on the most important stakeholders, which, in turn conserves resources and becomes more relevant.

For example, if the Training and Doctrine Command is identified as a Mixed Blessing and also a key stakeholder, then the survey could be conducted between the two organizations to measure exactly where problems exist with collaboration.

Conversely, it is not necessary to improve collaborative capacity with non-key stakeholders and thus, it is not necessary to conduct the survey with non-key stakeholders.

3. Assess and Analyze Your Network

Steps for assessing and analyzing collaboration effectiveness with regards to the elements of organizations and stakeholders have been covered thus far. However, those areas represent only two of the variables that leaders must consider in order to improve collaborative capacity. This section deals with how leaders can assess and analyze collaboration networks.

At a basic conceptual level, modern governments and acquisition organizations provide services through collaboration within a network. This entails taking inputs from one node in a network, doing something with that input and sending the processed input (now an output) to another node / organization in the network. The flow of work doesn't have to be sequential and could be very complex. As Milward and Provan note, "Since the problem is bigger than any organization, collaborating with other organizations is necessary if there is any hope of making progress in effectively managing the problem" (Milward & Provan, 2006, p. 8).

This section will examine: 1) types and characteristics of networks, and 2) modes of network governance.

a. Types and Characteristics of Networks

According to Milward and Provan, there are four types of government networks with corresponding purposes or characteristics. The four types of networks are: 1) service implementation networks, 2) information diffusion networks, 3) problem solving networks, and 4) community capacity building networks. Milward and Provan's types and purposes of networks are described below in Table 3. Network Types and Key Characteristics.

Network Type	Key Characteristics
Service Implementation Networks	<ul style="list-style-type: none"> • Government funds the service under contract but doesn't directly provide it (frequently health and human services). • Services are jointly produced by two or more organizations. • Collaboration is often between programs of larger organizations. • Horizontal management of service providers is a key task. These can be firms, nonprofits, or government agencies. • A fiscal agent acts as the sole buyer of services. • Key management tasks include encouraging cooperation, negotiating contracts, planning network expansion, etc.
Information Diffusion Networks	<ul style="list-style-type: none"> • Horizontal and vertical ties between interdependent government agencies. • Primary focus is sharing information across departmental boundaries. • Commonly used for disaster preparedness and other "high uncertainty" problems. • Key network goal is to shape government's response to problems through better communication and collaboration. • May be either designed or emergent.
Problem Solving Networks	<ul style="list-style-type: none"> • Primary purpose is to help organizational managers set the agenda for policy related to a critical national or regional problem. • Focus is on solving existing complex problems rather than building relationships for future problems. • Often emerges from information diffusion networks. • Relationships may be temporary, to address a specific problem, and then become dormant after the problem is resolved. • May be either designed or emergent.
Community Capacity Building Networks	<ul style="list-style-type: none"> • Primary goal is to build social capital in community-based settings. • Network purpose is both current and future oriented (i.e., to build the capacity to address future community needs as they arise). • May be created by participants (bottom-up) or by private and government funders (top-down). • Often involves a wide range of agencies with many emergent sub-networks to address different community needs that may arise.

Table 3. Network Types and Key Characteristics
(Milward & Provan, 2006, p. 11)

It is important in this phase for the acquisition leader to correctly assess the type of network in which the collaboration is operating. If the acquisition leader incorrectly assesses the type of network, it can have negative consequences during the planning phase in step 2 of our model. For example, if an acquisition leader believes he belongs to a problem solving networks with his own unique and isolated problem, he may to neglect the network's wider problem of servicing and equipping the soldier with a weapon system.

Often the acquisition leader will belong to a service implementation network, which performs services that are, “jointly produced by two or more organizations” (Milward & Provan, 2006, p. 11). Clearly, it takes more than one organization to field a weapon system. In the service implementation network horizontal management of services is important.

However, the type of network may vary by acquisition phases or by the leader’s type of job. For example, during the development and logistics phases, a problem solving network may exist or be needed. During the sustainment phase, a service implementation network may be needed. A Department of the Army Systems Coordinators (DASCs) may likely find herself in an information diffusion network, where the primary job is to share and coordinate across organizational boundaries. The point is that different types of jobs require different network governance styles. One purpose of our model is to assist the acquisition leader in determining the type of network governance that currently exists. During step two in our model, the leader would determine the type of network governance needed and the tasks needed to accomplish the appropriate form of network governance.

b. Modes of Network Governance

According to Milward and Provan, there are three modes of network governance: 1) self-governed network, 2) lead organization network, and 3) network administrative organization. A depiction of each Mode of Network Governance is shown below in Figure 4, Modes of Network Governance (Milward & Provan, 2006, p. 23).

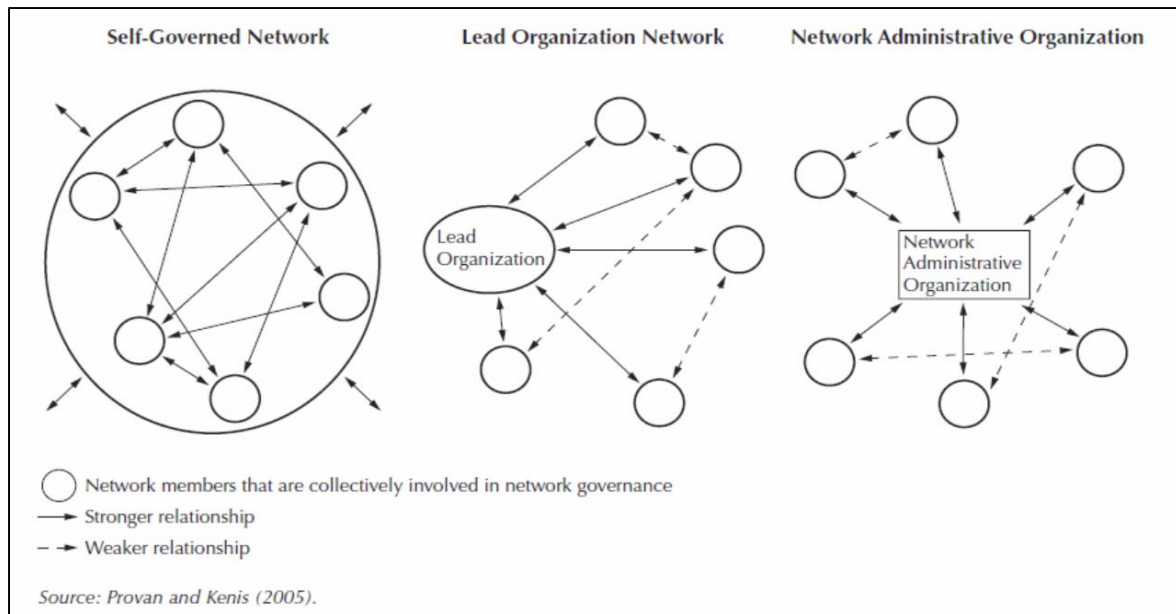


Figure 4. Modes of Network Governance (Milward & Provan, 2006)

We can see from Figure 4. Modes of Network Governance, that in a self-governed network there is no clear leader. In a lead organization network, a leader steps up and emerges, even though not officially designated the leader of the network. In a network administrative organization, an official headquarters is stood up to manage the network. Provan and Kenis further describe the structure, optimal number of members, decision making location and advantages and disadvantages of each network below in Table 4. Network Governance.

Design Characteristics	Self-Governance	Lead Organization	Network Administrative Organization
Structure	No administrative entity, participation in network management by all members	Administrative entity (and network manager) is a major network member/service provider	Distinct administrative entity set up to manage the network (not a “service provider”)—manager is hired
Optimal number of members	Few	Many	Many
Decision making	Decentralized	Centralized	Mixed
Advantages	Participation, commitment by members, ease of forming	Efficiency, clear network direction	Efficiency of day-to-day management, strategic involvement by key members, sustainable
Problems	Inefficient—frequent meetings, difficulty reaching consensus, no network “face”	Domination by lead organization, lack of commitment by members	Perception of hierarchy, cost of operation, complex administration

Table 4. Network Governance
(Milward & Provan, 2006, p. 22)

Within the wider, all encompassing, DoD acquisition network, there is clearly a network administrative organization, with the President and Secretary of Defense taking on the network administration organization role. However, in reality these individuals are so far above and removed from day-to-day decisions of administering the network that the lower ranking acquisition managers are left to manage without a clear and formal network leader. At the ground level in acquisition networks there are many “stove pipes” to the top. Thus, out of necessity, most acquisition networks are either self-governed or are governed by a lead organization, usually the program management office who has the most resources, though not necessarily the most power. That said, requirements writers, test personnel or resource managers can easily kill a program manager’s system.

Correctly diagnosing whether an acquisition organization should assume the lead organization role is critical. In many “stove piped” networks, no clear leading organization may emerge. If the acquisition leader incorrectly takes charge of the network, he may drown out important voices. Careful consideration should be given to which organization should lead a network, and which should be in a supporting role. As

we will see in step 2, analysis of what type of leadership is needed in a given network will have consequences for what leaders will do within that network.

4. Summary of Step 1

In summarizing Step One of our model, leadership should assess and analyze the three elements of collaborative capacity: 1) one's own organization, 2) external stakeholders, and 3) the network. This step of assessment and analysis should identify the most important problems the acquisition leader faces with regards to collaboration. The list of all potential factors affecting collaboration can be extensive. However, as the Hocevar et al. report shows in Table 1. Factors Affecting Inter-organizational Collaboration, there is a commonality about which factors enable collaboration, and which factors are barriers to collaboration. Once the most relevant factors are identified to each unique acquisition program, then leadership can in the next step in our model make plans for improving collaborative capacity.

Step 1 of our model began the process of answering our research questions: How do acquisition leaders measure and improve their own organization's collaborative capacity? How can acquisition leaders analyze and improve relationships with key stakeholders? How can acquisition leaders manage the "stove piped" acquisition system's network?

At this point in our model we have assessed and analyzed the data needed to formulate a plan for how to solve our collaboration issues. In the next section, we will explore how to make a plan to answer our research questions.

E. STEP 2 – MAKE PLANS TO IMPROVE AND MEASURE IMPROVEMENT IN COLLABORATIVE CAPACITY

The plans to improve collaborative capacity should dovetail with the qualitative and quantitative findings from step one. The plans for improvement will fall along the three elements analyzed in step one: our own organization, stakeholders, and the network. The plans for improvement will address our research questions.

The methodology we propose when making plans to increase collaborative capacity is to use measures of effectiveness and measures of performance as metric to

annotate where we are now and where we want to be in the future. Measures of performance are those factors that require action. That is, we perform some task in hopes of a desired outcome- the measure of effectiveness. The measure of effectiveness is the outcome resulting from our performed action.

This section has three subsequent parts: 1) plan organizational improvements, 2) plan to improve stakeholder relationships, and 3) plan to improve network effectiveness.

1. Plan Organizational Improvements

Planning organizational improvements that will increase or sustain collaborative capacity can be informed by the internal survey taken in step 1. As noted in the step 1, the survey can be used to gather internal data about an organization's generic collaborative capacity in terms of: 1) strategy, 2) structure, 3) processes, 4) rewards, and 5) people. Results of the survey can now be used to plan where collaboration improvement needs to be made. For example, in the following example survey question (and scoring), it may have discovered that there are no internal rewards systems in place.

My organization rewards members (e. g. , career advancement; promotion) for their successful Inter-Organizational Collaboration (IOC) activities; collaborative talents and achievements are rewarded.

1. Strongly disagree
2. Disagree
3. Slightly disagree
4. Slightly agree
5. Agree
6. Strongly agree
- ? I don't know

Twenty workers from various levels in the organization may have been asked this question and the average score may have been a 1.3, denoting that almost all “strongly disagree” with the question. Therefore, leadership may conclude that plans should be made to implement a personnel system that provides career advancement opportunities to those employees that effectively collaborate. In this example, a measure of performance is that management promotes one person every month or several per year based on their successful collaboration efforts. The measure of effectiveness in turn would be that all

employees would recognize that leadership puts an emphasis on collaboration and would therefore try to collaborate more. This may be measured a year later when the survey is again taken and the 20 workers average score this time jumps up to an average score of 5 denoting that all “Agree,” the organization rewards members for successful collaboration.

The concept of making collaboration improvement based on survey results should be applied to all the domains of collaboration. Table 5. Collaboration Measures of Effectiveness and Performance, denotes one way that leadership could plan for improving all domains affecting collaborative capacity. The chart shows the five domains of collaboration and allows management to fill in (unique to their organization) measures of performance (actions the organization can take to improve) that should in turn improve measures of effectiveness (outcomes of the organization’s actions). An example in Chapter III will provide a detailed illustration of how this could work.

Domain	Measure of Performance (MOP)	Measure of Effectiveness (MOE)
Strategy and Purpose		
Felt Need to Collaborate		
Strategic Action for Collaboration		
Resource Investment in Collaboration		
Structure		
Collaboration Structures		
Metrics for Collaboration		
Lateral Processes		
Information Sharing		
Reward Systems		
People		

Table 5. Collaboration Measures of Effectiveness and Performance

2. Plan to Improve or Sustain Stakeholder Relationships

Making plans to improve stakeholder relationships is very similar to improving one’s own organizational collaborative capacity, however, improving one’s own organizational collaborative capacity is done from a general point of view, with no specific stakeholder in mind, and only internal collaboration policy factors are considered. When trying to improve collaborative capacity with key stakeholders, then those specific key stakeholders must be considered as the plan is drawn up.

Plans to sustain key stakeholders who are supportive can begin by involving them in relevant issues. Ignoring the goodwill from key supportive stakeholders should be avoided. Further, leaders can make plans to empower these stakeholders by decentralizing decision making (Savage, Nix, Whitehead, & Blair, 1991, pp. 65-66). Plans to manage key mixed blessing stakeholders should be:

Managed through collaboration. If business executives the stakeholders' cooperation, potentially threatening stakeholders will find it more difficult to oppose the organization. (Savage, Nix, Whitehead, & Blair, 1991, p. 67)

Key stakeholders that are non-supportive should be defended against while seeking alternative agencies who can accomplish the same mission. However, this isn't always possible. Regardless, leaders should make plans to win over key nonsupportive stakeholders (Savage, Nix, Whitehead, & Blair, 1991, pp. 65–66).

3. Plan to Improve Network Effectiveness

The goal of this section is to provide a framework for managing collaborative networks or managing within a collaborative network, particularly if one's organization is not in a leadership role. For example, if no integrated product team (IPT) exists, a Program Manager may try through his leadership abilities to form an IPT. In this example, the program manager would assume the role of a lead organization for the purpose of forming the IPT. Having covered what types of networks there are and what types of modes of network governance exist according to Milward and Provan, we can now get to the important part of explaining what acquisition leaders should plan to do based on what types of networks and modes of network governance leaders find their organization existing in.

Milward and Provan explain that there are five essential network management tasks that must be planned for by leaders: 1) management of accountability, 2) management of legitimacy, 3) management of conflict, 4) management of design, (governance structure), and 5) management of commitment. Further, Milward and Provan also make the distinction that leaders must manage networks differently based on whether they are managing a network *or* are managers within a network. This distinction was determined in step one of our model. Now in step 2, it is time for the leader to decide

what actions need to be done. Milward and Provan's summation of how managers should plan to go about being managers of networks *or* managers in networks is shown in Table 6.

Network Managers' Planning Options

Essential Network Management Tasks	Management <i>of</i> Networks	Management <i>in</i> Networks
Management of Accountability	<ul style="list-style-type: none"> • Determining who is responsible for which outcomes. • Rewarding and reinforcing compliance with network goals. • Monitoring and responding to network "free riders." 	<ul style="list-style-type: none"> • Monitoring your organization's involvement in the network. • Ensuring that dedicated resources are actually used for network activities. • Ensuring that your organization gets credit for network contributions. • Resisting efforts to "free ride."
Management of Legitimacy	<ul style="list-style-type: none"> • Building and maintaining legitimacy of the network concept, network structures, and network involvement. • Attracting positive publicity, resources, new members, tangible successes, etc. 	<ul style="list-style-type: none"> • Demonstrating to others (members, stakeholders) the value of network participation. • Legitimizing the role of the organization among other network members.
Management of Conflict	<ul style="list-style-type: none"> • Setting up mechanisms for conflict and dispute resolution. • Acting as a "good faith" broker. • Making decisions that reflect network-level goals and not the specific interests of members. 	<ul style="list-style-type: none"> • Working at the dyad level to avoid and resolve problems with individual network members. • Working inside your organization to act as a "linking pin" to balance organization versus network demands and needs.
Management of Design (Governance Structure)	<ul style="list-style-type: none"> • Determining which structural governance forms would be most appropriate for network success. • Implementing and managing the structure. • Recognizing when structure should change based on network and participant needs. 	<ul style="list-style-type: none"> • Working effectively with other network participants and with network-level management, based on the governance structure in place. • Accepting some loss of control over network-level decisions.
Management of Commitment	<ul style="list-style-type: none"> • Getting the "buy-in" of participants. • Working with participants to ensure they understand how network success can contribute to the organization's effectiveness. • Ensuring that network resources are distributed equitably to network participants based on network needs. • Ensuring that participants are well informed about network activities. 	<ul style="list-style-type: none"> • Building commitment within the organization to network-level goals. • Institutionalizing network involvement so that support of network goals and participation goes beyond a single person in the organization.

Table 6. Network Managers' Planning Options and Tasks
(Milward & Provan, 2006, p. 19)

F. STEP 3 – EXECUTE PLANS FROM STEP 2

Step 3 is relatively simple yet important. Reviewing what we have already covered earlier, in step 1, collaboration issues were measured and identified. In step 2 plans were made for how to deal with collaboration issues identified in step 1. Finally, now during step 3, the plans from step 2 are executed to improve collaborative capacity.

Step 3 is critical. It is not enough to identify problems and make plans to fix them. The expectation is that real improvement in collaborative capacity will happen during this phase. This is where leadership will be the most important. Leaders must emphasize those factors they identified previously as hindering collaboration and see the plan through until collaborative capacity has reached a satisfactory level.

Execution of the plan to improve collaborative capacity can be a lengthy process depending on the complexity of the acquisition program, number of stakeholders, length of time leadership has been in the position, and resources available. The execution phase will be ongoing, as changing variables cause changes in the plan to collaborative improvement. Regardless of implementation timelines, it is important re-measure and re-analyze whether or not collaborative capacity improved and the plan has been executed as intended. A simple way to accomplish this is by repeating Step 1 in our model by returning to assess/ analyze. Hopefully, if steps 1, 2 and 3 have been correctly completed up front, then when it comes time to repeat step 1, a measurable improvement will be noticed in collaborative capacity.

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III. ASSESSING COLLABORATIVE CAPACITY AT PM “GUN”: APPLICATION OF THE MODEL

This chapter provides an in-depth example on how to assess and improve collaborative capacity in a real-world organization. Efforts to improve collaboration are applicable to any organization, but this example uses an Army acquisition project management office and the related agencies/ offices. Project management offices are typically tasked with bringing new material solutions to the soldier, which, as we will see, is a collaboration-intensive effort. This example will follow the basic model set forth in Chapter II of this project.

1. Assess and analyze collaborative capacity
2. Make plans to improve collaborative effectiveness
3. Execute plan

The academic and research models discussed in Chapter II will be integrated in each of these steps.

Based upon the current organization of Program Executive Offices (PEOs) under the Assistant Secretary of the Army for Acquisition, Logistics, and Technology (ASAALT), we use a fictional Project Manager called “PM GUN.” This example assumes that the leader of PM-GUN has assessed the situation and made the determination that collaboration is necessary to ensure success.

A. ASSESSING AND ANALYZING MODEL ELEMENTS

From Chapter II, our first step is to assess and analyze existing collaborative capacity through the elements of the organization, its stakeholders, and the resulting network. Figure 5. Headquarters and Support Agencies for PM-GUN provides a chart describes PM-GUN, a fictional entity that develops a weapon system for soldiers. The figure also shows PM-GUN’s direct chain of command and agencies that are meant to coordinate with one another. “PM GUN” is kept at a general level for applicability across the spectrum and to emphasize application of the collaborative capacity assessment model.

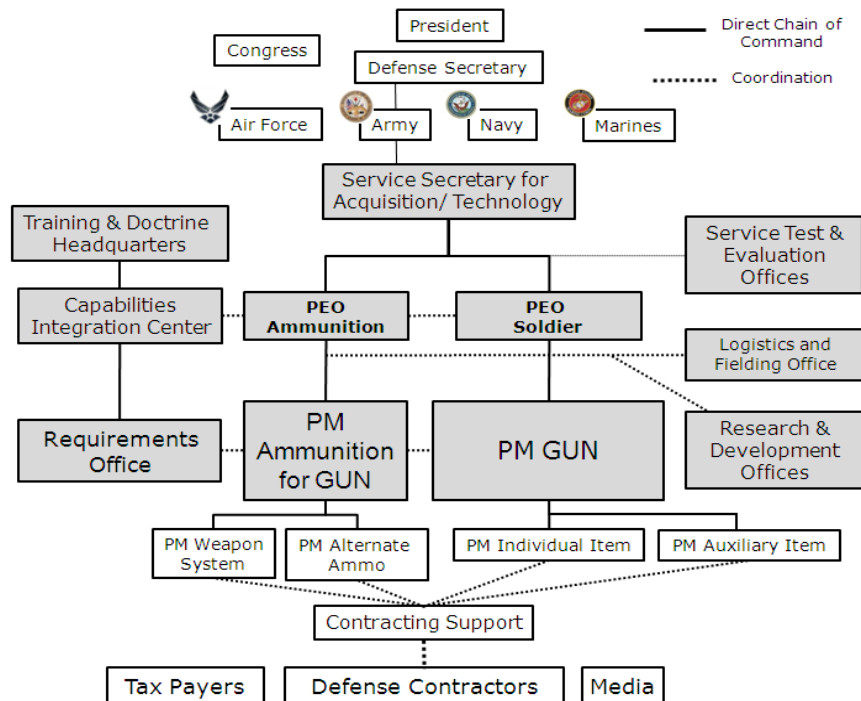


Figure 5. Headquarters and Support Agencies for PM-GUN

PM-GUN’s mission statement is “to provide U.S. Soldiers with the best gun in the world.” The vision of PM-GUN reflects regulatory requirements associated with the development of materiel through the current Joint Capabilities Integration and Development System (JCIDS):

1. Guaranteed overmatch against enemy systems in accordance with user requirements
2. Predetermined availability, reliability, and maintainability percentages that meet user requirements
3. Total life cycle management of “Gun” system from initial development to retirement and disposal
4. Full interoperability with existing battlefield systems
5. Total Life Cycle Cost and schedule constraints

Figure 6 shows the layout of the PM-GUN office, its key leaders, and how these key leaders relate to each other.

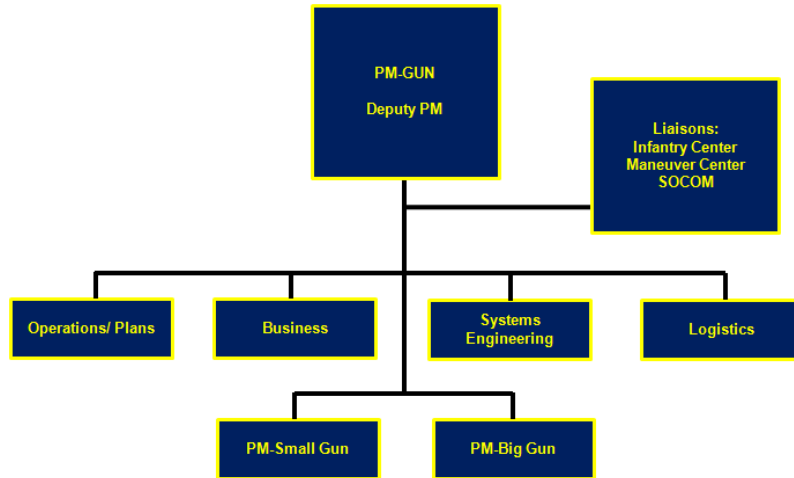


Figure 6. PM-GUN Internal Leadership Diagram

Based upon the mission and vision, it is already apparent that PM Gun will have to work with multiple agencies or offices in a collaborative manner to accomplish its goals, whether they are established internally or imposed through regulations. The interoperability requirement alone implies coordination across multiple other PMs that might be affected by data transfer, munitions development, spare parts storage, and geographic footprint of the “Gun” system. These interactions will be examined more closely during the stakeholder analysis.

With this framework in place, we can turn our attention to assessing the collaborative capacity of PM-GUN itself.

1. Organization

We begin with PM-GUN’s organization. To complete this assessment, we use a collaborative capacity survey (Hocevar, Thomas, & Jansen, 2006) that is based on Galbraith’s STAR model, allowing us to assess the areas of strategy, structure, lateral processes, rewards, and people (from this point forward we refer to this document as the HTJ survey). Appendix A includes a version of the Hocevar, Thomas and Jansen (HTJ) survey that was specifically adopted for this study. Its purpose is to assess PM-GUN’s

organizational design as it supports or impedes collaboration with other agencies and offices. This will help effectively gauge how organizational design affects the collaborative capacity of PM-GUN.

During this phase, qualitative results help complement quantitative data. An interview can provide effective input about attitudes towards collaboration in conjunction with statistically significant data. However, using data to develop interval estimators poses its own challenges. An evaluator must consider the total number of personnel in the organization, desired confidence levels, and the challenge of obtaining an unbiased representative sample to draw inferences about a population based upon sample survey means. For example, PM-GUN is an organization of 160 personnel, so there is potential for a sample representation of a population for survey questions. However, 113 surveys are required for a confidence level of 95% and a confidence interval of 5 (this can be calculated simply through websites such as <http://www.surveysystem.com/sscalc.htm>). Further, if these surveys were all conducted by personnel who had similar attitudes, positions, or responsibilities, the results would paint an unrealistic or incomplete picture. At this early phase of the assessment the leadership must make the determination of which type of information to pursue, and which information to act on.

For our example, the leadership of PM-GUN chose to conduct a two-phase internal assessment. The first phase was accomplished with qualitative interviews of the following key leaders using the HTJ survey:

Program Manager for PM-GUN

PM-GUN Logistics Manager

PM-GUN Operations Officer

Product Manager for Small Gun

PM-GUN Business Office Manager

Product Manager for Large Gun

PM-GUN Systems Engineer

The second phase was accomplished by asking a representative sample of workers to complete the HTJ survey. For our purposes we assume that 113 personnel completed the survey to achieve a 95% confidence level when using the data to make predictions about the population. The hypothetical results from the personnel surveys are shown in Table 7:

PM-GUN Collaborative Capacity Survey, N = 113			
Domain	Focus Area	Mean	Standard Dev
Strategy and Purpose	Felt Need to Collaborate	3.5	1.2
	Strategic Action for Collaboration	1.3	1.0
	Resource Investment in Collaboration	1.1	1.0
Structure	Structural Flexibility	1.2	1.0
	Structuring for Individual Collaboration	1.5	1.1
	Collaboration Structures	1.2	1.0
	Metrics for Collaboration	1.0	1.0
Lateral Processes	Tools and Technology	3.2	1.2
	Information Sharing	2.1	1.1
	Collaborative Learning	1.1	1.0
	Social Capital	2.5	1.1
Rewards	Reward Systems	1.0	1.0
People	Individual Collaborative Capacities	3.5	1.2
1 = strongly disagree 4 = slightly agree 2 = disagree 5 = agree 3 = slightly disagree 6 = strongly agree			

Table 7. PM-GUN Personnel Survey Results

This two-pronged approach allowed the leaders of PM-GUN to assess collaborative capacity from management’s perspective through qualitative analysis, and then compare results with an appropriately sized sample of surveys from the rank and file. A quick glance at the scoring shows relatively low scores across the five domains, but these must be compared and contrasted with the qualitative results of the leadership surveys. The collective survey results lay the groundwork for assessing PM-GUN’s existing collaborative capacity.

a. Strategy

The “strategy and purpose” domain assesses if an organization understands the need for collaboration based upon its established structure, regulatory requirements, and the nature of its mission. Survey results indicate that PM-GUN’s personnel believe collaboration with other organizations is reasonably important for mission success, but personnel also believe that PM-GUN has failed to adequately

resource collaboration or provide guidance on collaborative activities. Key leader interviews describe territorial feelings and competition that cloud the need to build a strategy for collaborative capacity, which may partly explain why employees feel that collaboration efforts are under-resourced and lack strategy.

Qualitative leadership results also show attitudes that could be barriers to building a strategy for collaborative capacity: one respondent stated that when dealing PM-Ammunition for Gun (PM-AG), PM-GUN felt threatened by a separate chain of command and a perceived lack of control over what is considered a sub-system of the “Gun” itself. Furthermore, based upon established organizational lines, it appears that PM-GUN competes directly with PM-AG for resources. These statements confirm the quantitative results shown in Table 7. PM-GUN Personnel Survey Results. The overall result is a lack of established collaborative goals, an inability to work productively towards common goals, and no efforts to build collaborative capacity.

It is worth noting that PM-GUN’s attitude towards other agencies is different than its attitude towards PM-GUN. Many of the satellite organizations shown in “Figure 5. Headquarters and Support Agencies for PM-GUN” are considered supporting agencies to PM-GUN, even if they have the capacity to help or hinder PM-GUN’s mission. One key leader indicated that PM-GUN considers nearly all external agencies to be subservient to its larger mission of providing the best “Gun” to the soldier, and has correspondingly attempted directive leadership instead of collaboration. Subservience by virtue of organizational structure does not preclude a need for collaboration, and this particular attitude may prove to be a tough collaboration barrier to overcome.

The quantitative survey and leadership interviews indicate, in general, that PM-GUN lacks a strategy for building and maintaining collaborative capacity. It is possible to infer that this is tied to the leadership’s attitude towards external agencies. The lack of a strategy for building collaborative capacity is a likely indicator of collaboration barriers in lateral processes, rewards, and people as well.

b. Structure

The “structure” domain assesses an organization’s policies and procedures to determine if they facilitate collaboration. A collaborative structure will also include metrics, specific roles, and inter-organizational agreements on collaboration to ensure that resources are allocated in accordance with requirements.

Survey results and leadership interviews at PM-GUN showed a lack of structure to support collaborative capacity, which was reflected by particularly low scoring in this domain. Since regulatory requirements force PM-GUN to interact with external agencies, leadership respondents indicated that PM-GUN personnel have developed the ability to form partnerships quickly out of necessity. These partnerships are constructed on an ad-hoc basis, without lasting structure, but they are positive indicators of the collaborative capacity demonstrated by PM-GUN’s personnel. This represents a start-point for current collaborative capacity.

Interviewees freely admit that leadership does not listen to input from subordinates unless it is presented as coming from within the organization. There are no formal agreements between agencies with the exception of a general concurrence that PM-AG and PM-GUN should provide a functioning “Gun” with associated “Ammunition” to the end user. As a result, the “structure” domain is also a barrier to collaborative capacity.

c. Lateral Processes

The “lateral processes” domain assesses an organization’s ability to share information to achieve common goals as facilitated by appropriate tools and technologies. This domain also encompasses building social capital (trust) with other organizations, and using lessons learned to improve collaboration efforts.

Quantitative survey results show that lateral processes are lacking, which is not surprising in light of low scoring for the strategy and structure domains. Leadership surveys reflect this as well, indicating that networks between PM-GUN and other agencies are loose. Communication tools or other enablers for collaboration are only found at the highest levels, with limited availability for the average employee. Social

capital is kept at the level of personal relationships, and these relationships are only used in times of need. There is no initiative in terms of collaboration, and information is only shared if something is to be gained. Although the basic building blocks for lateral processes are in place, this domain is generally a barrier to collaboration because of the exclusivity of technology and the relationships that comprise social capital.

d. Rewards

The “rewards” domain assesses if successful collaborative actions are rewarded within an organization to improve collaborative capacity. Both qualitative survey respondents and leadership interviewees were unanimous in their responses here: There is no reward system in place to recognize collaborative efforts. This is directly tied to PM-GUN’s leadership and its perceived relationships with surrounding agencies. All rewards are geared towards mission accomplishment, without the realization that mission accomplishment is impossible without effective collaboration between the multiple agencies that make up PM-GUN’s network.

e. People

The “people” domain assesses the individual collaborative capacities necessary to effect collaboration in the interest of mission accomplishment. Since people are the start point for collaborative capacity, this particular domain can show promise without the other elements of strategy, structure, lateral processes, or rewards. However, all five domains are necessary to build lasting collaborative capacity.

Scores from the PM-GUN quantitative survey show that the people working within PM-GUN understand that collaboration is a necessity. However, they also understand the reality of a PM that is mission focused and does not concern itself with the missions of adjacent agencies or PMs. As a result, team process skills and conflict management techniques are kept in the closet until needed at some critical juncture, and only progress related to the PM-GUN mission is briefed at Program Management Reviews. The “people” domain shows promise, but without the other domains, collaborative capacity will remain low.

To summarize the results of the internal organizational assessment, PM-GUN has a limited collaborative capacity based upon weaknesses in its **strategy, structure, processes, and rewards**. Its **people** have redeeming qualities in that they make the necessary collaboration happen, but this collaboration occurs in an environment that is hostile, unforgiving, and under-resourced. Returning to the STAR model, we can see how this translates to forces that impede effective collaboration (and likely mission accomplishment) within the organization. It is also instructional to develop a graphic that shows how the cards are stacked against effective collaboration within PM-GUN. Figure 7. PM-GUN restraining collaborative issues shows the aspects of Galbraith’s STAR model, categorized within “positive” and “negative” aspects.

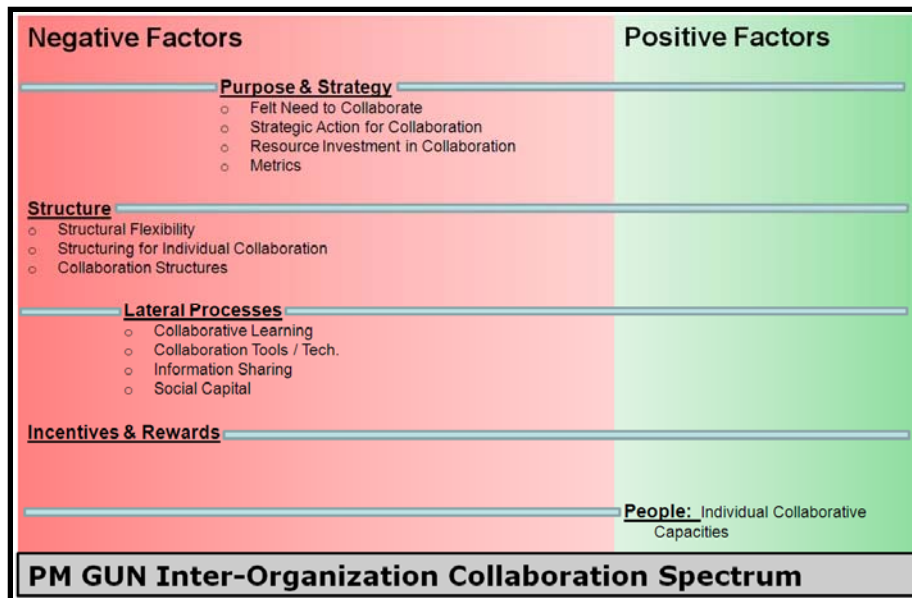


Figure 7. PM-GUN restraining collaborative issues

2. Stakeholders

Our baseline assessment of PM-GUN’s current collaborative capacity allows us make plans to improve it. The next step, “Stakeholder Analysis,” helps identify and prioritize parties that have a vested interest in PM-GUN’s mission. These stakeholders are the focus of collaborative efforts, and a stakeholder analysis helps determine to what degree collaboration should take place. Returning to Figure 5. Headquarters and Support Agencies for PM-GUN, the original stakeholders are identified and examined.

Although this list is not exhaustive, it does represent the major stakeholders that most project managers will be involved with, regardless of whether the office is expending research and development dollars or procurement dollars. Table 3 identifies 15 stakeholders related to PM-GUN's mission. Column 2 describes why each stakeholder is interested, and Column 3 shows how that stakeholder might impact PM-GUN's mission. For example, PM-GUN will likely hire a private contractor to construct the "GUN" system. This contractor will have an interest in the success or failure of PM-GUN's efforts because PM-GUN pays the contractor and determines if performance parameters are met for the "GUN." PM-GUN and the contractor have common interests, and each can impact the other. The contractor is clearly an important stakeholder.

With that in mind, it is prudent to identify "key stakeholders" such as the contractor, which may have a heavy impact on the success or failure of an organization's mission. In this instance, the contractor is clearly a key stakeholder, acting in PM-GUN's interest as a paid entity with engineering and manufacturing expertise. However, lateral agencies may also influence the PM-GUN's mission. Take, for example, PM-AG, which supplies the ammunition for PM-GUN's system. PM-AG is likely considered a key stakeholder as well, because without ammunition, the "Gun" system simply will not work. Conversely, the Testing and Evaluation (T&E) community can affect the mission of PM-GUN, but chances are that the mission would not be completely blocked (or facilitated) by actions that the T&E community took autonomously. Further, there are times during the acquisition process that T&E actions are critical, and other times when they are less relevant. Therefore, T&E as a key stakeholder is a function of what part of the acquisition timeline PM-GUN is currently in. For our scenario, PM-GUN finds itself involved in Low Rate Initial Production (LRIP), which means that T&E has strong relevance. It is critical to realize that the leadership must determine, based upon its current and future situation, what stakeholders have relevance and might be considered as "key" to mission success, keeping in mind that relevance can change over time.

Stakeholder	Interest	Impact
PM-GUN (Our Organization)	Making effective guns for soldiers, manages procurement/ configuration/ development of guns	Plans/ resources/ executes efforts to make guns
Project Office Ammo for Gun	Making effective ammunition for soldiers, serves as Headquarters for office managing gun ammo	Plans/ resources/ approves efforts to make gun ammo
Product Office Gun Ammo	Making effective ammunition for soldiers; manages procurement/ configuration/development of gun ammo	Plans/ resources/ executes efforts to make gun ammo
Contactor(s)	Development of reliable, maintainable systems in accordance with PM requirements; making a profit	Ultimately responsible for system quality/ effectiveness
Research/ Development Offices	Development of reliable, maintainable guns in accordance with PM guidance, by working jointly with contractors	Provides engineering support for weapons research/ development/ procurement
Testing/ Eval Offices	Unbiased assessment of designs in accordance with prescribed PM test plans	Provides testing/ evaluation of new/ current systems
Procurement Office	Development and oversight of legally binding contracts for procurement of systems, as directed by PM	Develops legal contracts to facilitate procurement
Sustainment, fielding, and Logistics offices	Providing long term sustainability of systems through maintenance and logistics	Provides logistical support for existing service systems
Capabilities Integration Center	Ensuring systems operate effectively with existing systems	Ensures integration of new weapons with existing systems in inventory
Requirements Office	Assessing capabilities gaps for respective service, and documenting them as formal requirements	Develops formal requirements that generate funding for PM development and procurement actions
USAF, USMC, USN	Accomplishing DoD missions around the world, facilitated by respective systems PMs provide	Develop joint research/ procurement of new systems to leverage quantity/ commonality
President	Provides leadership and direction for U.S.; proponent for National Defense Strategy	Drives PM's defense priorities/ funding through proposed legislation
Congress	Allocates/ appropriates funding for PM development of weapon systems in accordance with requirements	Can add/ decrement funding, increase oversight/ reporting
Secretary of Defense	Executes President's plans for national defense	Establishes national defense priorities per the President
Asst Sec Army Acq/Log/Tech	Develops policy and priorities for acquisition and sustainment of technology and materiel	Sets acquisition policies, procedures, and priorities

Table 8. PM-GUN stakeholder analysis

The most effective way to assess stakeholders in this respect is to use Savage's model, shown in Chapter II.

Figure 3. Stakeholder Types. By aligning PM-GUN's stakeholders into one of the four categories, strategies for how to deal with each become apparent. Combining this model with Figure 5. Headquarters and Support Agencies for PM-GUN and Table 8. PM-GUN stakeholder analysis, we can relook our original table of stakeholders and add a little more detail to our own stakeholder analysis. The result is shown in Figure 8. PM-GUN categorized stakeholder analysis.

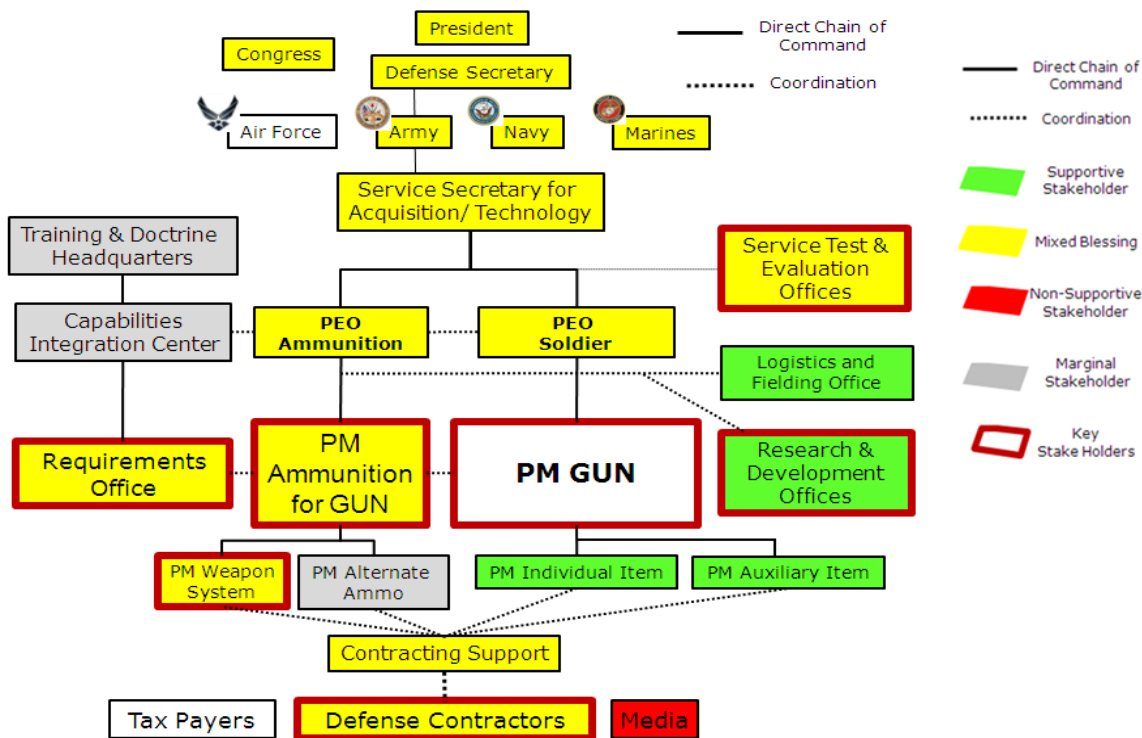


Figure 8. PM-GUN categorized stakeholder analysis

Through the lens of Savage's model, it is clear that there are multiple mixed-blessing stakeholders that have the potential to harm or help PM-GUN. Congress, for example, could affect PM-GUN's efforts negatively through decremented funding or positively through increased funding. Generally, most stakeholders are in this category, although there are some stakeholders that are exclusively supportive. A subordinate program office that is directly under PM-GUN's control is both supportive and easily

managed, and the logistics fielding, research/development, and contracting offices are generally supportive of a PM's efforts as well. Subordinate program offices under PM-AG are only relevant if they manufacture systems used by PM-GUN; hence, PM-Other Ammo is a marginal stakeholder. The one true non-supportive stakeholder in this scenario is the media. Even if the media produced positive stories about a system, it likely wouldn't provide a direct benefit to a PM, and negative stories can cause unwanted attention, questions, and redirection of resources towards defending actions.

As mentioned previously, the key stakeholders (with a red border) are the main entities that can highly influence PM-GUN's mission success or failure. The challenge is to determine what entities will prove to be key stakeholders. A simple prioritized "1 to N" list may work in some situations, but prioritizing stakeholders requires more than simply determining which ones are preferred over others. Often the determination of key stakeholders will require past experience, careful consideration of a stakeholder's position, and an analysis of key resources required to achieve PM-GUN's mission.

For our scenario, key stakeholders include the aforementioned PM-AG, its subordinate program office PM-GUN Ammo, and PM-GUN itself. Without direct collaboration between these entities, PM-GUN's mission cannot succeed. This is punctuated by the fact that PM-GUN and PM-AG are under separate chains of command. Additionally, since our timeline is defined by the low rate initial production of "Gun" systems, key stakeholders will include the above mentioned offices, the requirements office (who gives the impetus for the program's existence), the R&D community, the T&E community, and the contractor.

Determining key stakeholders provides an important tool for prioritizing collaborative efforts because collaboration takes time and resources. Once key stakeholders are defined, PM-GUN can proceed with efforts to improve collaborative capacity with those stakeholders as it moves towards the ultimate goal of mission accomplishment. Earlier, PM-GUN completed an internal benchmark of collaborative capacity within its own ranks using the HTJ survey. For the next step, we recommend that PM-GUN apply the same survey at the offices of its key stakeholders in an effort to understand the collaborative environment. The survey works equally well to assess

collaborative capacity between two organizations, despite being designed as an inward looking tool for assessing collaborative capacity.

To pursue this, PM-GUN would likely have to coordinate with the leadership of other key stakeholders to discuss shared goals and the benefits of collaboration in achieving those goals. For the purposes of this scenario, we assume that PM-GUN opened communications with the leadership of PM-AG and discussed the application of the HTJ survey with an outward look: PM-AG assessed collaborative capacity with PM-GUN, and PM-GUN reciprocated. Both organizations chose to use analogous key leaders to build representative, qualitative results as a pilot to determine if further surveys might be needed. A sample of the scores from these two surveys between key stakeholders is shown below in Table 9. HTJ surveys between key stakeholders PM-GUN and PM-AG Table 1. Factors Affecting Inter-organizational Collaboration.

PM-GUN and PM-AG: Cross Assessment Collaborative Capacity				
Survey Focus Area	PM-GUN Self Assessed	PM-AG Self Assessed	PM-GUN view of PM-AG	PM-AG view of PM-GUN
Strategy/ Purpose	2.0	1.9	2.1	1.2
Structure	1.2	1.6	1.1	1.2
Lateral Process	2.2	2.1	1.2	1.1
Reward System	1.0	1.0	1.0	1.0
People	3.6	4.1	1.5	1.4
1 = strongly disagree 2 = disagree 3 = slightly disagree		4 = slightly agree 5 = agree 6 = strongly agree		For PM-GUN, n = 113 For PM-AG, n = 108

Table 9. HTJ surveys between key stakeholders PM-GUN and PM-AG

The results of this cross-assessment reveal more than the initial inward look at PM-GUN. PM-AG suffers from the same lack of strategy, structure, and other aspects of collaboration that PM-GUN does, despite the fact that the need for collaboration between both offices has been predetermined. PM-AG's surveys reveal that its people make collaboration happen when necessary, much like their counterparts at PM-GUN.

However, the slightly higher score in PM-AG's "people" domain may indicate that collaboration is expected to take place at this level exclusively. PM-GUN had a more positive view of PM-AG's "strategy/ structure" domain as well. Further discussion would be required to determine why this occurred; these will provide an outlet for employees to discuss collaboration efforts and provide more of the qualitative results previously mentioned. In keeping with the scenario, we have provided some sample comments would be seen in this type of situation. PM-GUN employees made the following comments about PM-AG:

"Strategic meetings are conducted about every 12 to 14 months, with high level leadership. However, usually they are 'show and tell' meetings, not actually strategic planning. "

"The MOA superficially made the peace, but in reality, individuals were 'at war'."

"We had special, unrepeatable names for key leaders at PMAG."

"We will not share information with PM-AG if not asked."

"Collaboration was an additional duty and considered to be a nuisance and adding an unneeded level of management."

Conversely, PM-AG employees relayed the following sample comments about PM-GUN:

"We like to own the specification to what we are producing / buying. Therefore, collaboration happens on our terms. "

"An officer who worked previously in PM-GUN served informally as a liaison because he had the least amount of distrust with their office. "

“Collaboration was frowned upon and done out of necessity.”

The leadership of both organizations can use comments such as these to see where to focus their efforts to improve collaborative capacity. For example, the comment that “collaboration happens on our terms” might indicate why PM-GUN gave PM-AG a slightly higher score in the “strategy/ structure” domain during the cross evaluation, but it could also indicate a negative barrier to collaboration. For the purposes of our scenario, most of the comments confirm what we have already seen within PM-GUN: collaborative capacity is weak, and an aversion to collaboration is embedded in the culture of both organizations. This determination leads to further potential actions: as the lead organization in the effort to improve collaborative capacity, PM-GUN should strongly consider trade-out surveys with other key stakeholders within their network. With that in mind, we move to assessing the network that these stakeholders operate in.

3. Network

A network represents the amalgamation of the stakeholders, the organization, and a set of pre-determined goals. The network is more than the sum of its parts, and members of the network can benefit from the resources and interrelationships that the network provides. Within its network, PM-GUN does not directly control many of the offices it must work with; rather, it requires their input and products to move forward in accomplishing its mission goals. Many of these goals are consistent with those of its stakeholders, such as PM-AG, which is also tasked with providing overmatched weapon systems to the soldier to ensure victory on the battlefield. An agency such as the R&D office, on the other hand, plays a supporting role in the network: its mission is to develop technologies that can be weaponized with reliability and effectiveness. This mission supports the mission of PM-GUN.

Each of these network participants (or “nodes”) receives input, modifies it, and provides a product in turn. In PM-GUN’s network, these products result in fielded systems. Classifying this network in accordance with Milward and Provan’s network types can enhance understanding of the interactions between nodes, stakeholders, and the organizations (Milward & Provan, 2006). Of the four types of networks described in the

model, the one that appears to have the closest fit to PM-GUN's mission is the problem solving network, described as helping organizational managers "set the agenda for policy related to a critical national or regional problem" (Milward & Provan, 2006). However, this type of network is focused on solving acute problems in the short term instead of positioning an organization for a sustained effort. Thus, relationships are only temporary and geared towards solving an immediate crisis; many are developed out of convenience and mutual interest in solving an emergency situation. An example of this type of network would be a disaster relief effort, where every entity and resource is focused on the mission at hand. Generally, this type of network is inconsistent with what PM-GUN is trying to accomplish. The life cycle of a weapon system is often spread out over years, not months, and relationships to support that weapon system must be intentionally developed and cultivated.

The more appropriate type of network that defines PM-GUN is the Service Implementation Network. Here, a contractor is funded to develop a product or service for the government, which immediately implies collaboration between two organizations. With the inclusion of PM-AG and the ammunition required to make "GUN" operate, a third member joins the network. While PM-GUN controls the contractor through payment and performance evaluations, PM-AG is a horizontally managed organization, and PM-GUN must use collaborative leadership to ensure mission success. This type of collaborative arrangement is required for many of the organizations that PM-GUN encounter. If collaboration is effectively planned, the relationships will likely become permanent and foster further success, but for the most part, simply acknowledging the need to collaborate and establishing the structure to facilitate collaboration (from Galbraith's Star Model), will reap benefits. These characteristics fit neatly into the Service Implementation type of network.

Assessing the mode of network governance is slightly more challenging than categorizing the type of network. PM-GUN could be in a self-governed network, since offices like PM-AG, R&D, and T&E all have separate chains of command, but these offices all work towards a common goal. As such, PM-GUN develops a certain amount of "asymmetrical power" since efforts from every office support the development of the

GUN system. This falls more into the category of a lead organization (Provan & Kenis, 2005). It is worth noting that the lead organization style of network governance usually has more brokered contact instead of the direct contact found in a self-governed network (Provan & Kenis, 2005), which may prove to be a barrier to effective collaboration. This is the situation seen in many PMs, where only certain people are authorized to liaise, consult, or make decisions in conjunction with other offices. The larger acquisition picture places PM-GUN in a network administrative organization, but this is such a broad network (encompassing members such as congress and the president) that it proves to be unmanageable.

PM-GUN has a service implementation network and operates as a lead organization, which defines the environment and frames actions for improving collaborative capacity. As the lead organization, PM-GUN can act as a centralized decision maker in many instances, because its mission is the focal point of the efforts of other members of the network. PM-GUN should ensure that it is not overbearing in this effort, however, or it may risk a lack of participation by network members.

Based upon its participation in a service implementation network, PM-GUN should focus on the following:

- encourage cooperation
- plan network expansion
- manage horizontally
- build longer and stronger relationships
- cease temporary, ad hoc problem solving
- determine network outcomes
- reward network compliance
- build and maintain network legitimacy
- manage conflict within the network
- manage the design of the network
- manage the commitment of the network

These types of actions will solidify PM-GUN's role in the network, while facilitating collaboration and an improvement of collaborative capacity. It is worth mentioning that

the Integrated Product Teams (IPT) commonly found through PM offices represent a quick and easy place to apply these principles.

B. SUMMARY OF EXISTING COLLABORATIVE CAPACITY

To summarize:

1. We have assessed PM-GUN internally to determine collaborative capacity in accordance with Galbraith's star model, using a survey developed by Hovevar, Thomas, and Jansen. In four domains (strategy, structure, lateral processes, and rewards), there was room for improvement. The "people" domain showed that PM-GUN's people make any necessary collaboration happen, but only as required.
2. We have conducted a stakeholder analysis that has resulted in identification and categorization of stakeholders. Our key stakeholders are PM-GUN, PM-AG, the "GUN" contractor, the requirements office, R&D offices, and T&E offices. By improving collaboration with these entities, PM-GUN can better its chances of mission success, without wasting resources on unnecessary collaborative efforts.
3. We have assessed the type of network we operate in and found it to be a service implementation network. Further, we have analyzed the network and determined that its mode of network governance is "lead organization"; that organization is PM-GUN. Based on these assessments, PM-GUN has several actions it can take as the lead organization to facilitate improved collaborative capacity in support of its mission.

With these assessments, we can now begin plans for improving collaborative capacity.

C. PLANS FOR IMPROVEMENT OF COLLABORATION CAPACITY

The first step in improving collaborative capacity is to establish a benchmark; completion of the HTJ surveys provides data to establish that baseline. The scores in each area of the survey become a start point for measuring collaborative performance. What remains is to tie improved collaboration to some measure of effectiveness within a

program office. As most PMs focus on managing in accordance with the basic metrics of cost, performance, and schedule, it is logical to apply these as measures of collaborative effectiveness. As each of the network nodes receives input, it will process that input, and with effective collaboration, return a product that keeps the mission on track. Therefore, if the program stays within cost, collaboration with the requirements office and contractor must be working. If the program stays on schedule, collaboration with offices such as R&D, T&E, and the contractor must be working. If the program meets performance requirements, collaboration between T&E, the requirements office, PM-GUN, PM-AG, and contractor must be working. Although these abbreviated examples are simple to explain, they clarify the complex nature of effective collaboration and its resultant effects on a chosen set of metrics.

With carefully chosen measures of performance and effectiveness, PM-GUN can move towards collaborative improvement in specific areas. Based upon the STAR model, a basic strategy should be developed for collaborating with key stakeholders. Accomplishing this will likely require a leadership meeting between the key stakeholders, during which common goals can be discussed, in conjunction with a strategy to meet those goals for all involved. Several of the key stakeholders may have their own, divergent goals, but unless their involvement in collaborative efforts with PM-GUN runs directly counter to these divergent goals, this will not present a problem. For PM-GUN's key stakeholders, a likely strategy would be the common goal of fulfilling requirements within cost, schedule, and performance, while getting an operational weapon system to the soldier in the shortest amount of time. If all key stakeholders agree to this, leaders participating in the strategy meeting can enforce commensurate actions within their organizations and remove roadblocks to assist other key stakeholders.

Once the strategy is in place, key leaders must emplace a structure to facilitate the strategy. An effective memorandum of agreement between organizations such as PM-GUN and PM-AG will prevent crossed priorities, confused lines of communication, and settle many disagreements outright. Further, specific meeting times and designated representatives from each organization should be established. To spread the responsibility and facilitate understanding, these meetings could take place at various locations, in

conjunction with facility tours. A good example would be holding a collaboration meeting at the contractor's manufacturing facility, so that PM-AG, R&D personnel, and T&E personnel could better understand the contractor's capabilities and limitations with respect to building the "GUN" system. The frequency of the meetings should reflect the importance of the collaborative efforts.

While strategy and structure for collaboration can be established with relative ease, establishing lateral processes will take time and exposure. The development of social capital between key stakeholders will require familiarity between organizations, and a willingness to share information. Scheduling off-site meetings, picnics, or events between key stakeholder personnel is an effective technique, as it puts personnel at ease and allows them to freely exchange ideas while building relationships. Collocation of key stakeholders is another technique, although this is not always possible, and sometimes not desirable. Alternatively, new technology presents useful techniques for bridging geographic separations as well, through teleconferences and video conferences.

Incentives can be put in place to reward personnel for collaborative activities. The incentives should reflect the prioritized collaborative goals of the leadership, to maximize the use of limited resources such as time and personnel. Establishing measures of effectiveness will help personnel understand how they can best improve collaborative capacity to garner those rewards.

Finally, improving people involves building the necessary trust and competence in areas of collaboration and the technical information that will be exchanged with stakeholders. People in the organization must understand that their collaborative competencies are needed to facilitate the goals of the organization, and their commitment must reflect this. Leadership emphasis is critical here, and can take many forms. Mission or vision statements that clarify goals throughout the organization can help, and scheduled training geared towards improving collaborative capacity provides both competence and emphasis on the importance of this goal.

Efforts to improve in accordance with the HTJ model should be kept within the framework of an organization's limitations, as established during the initial organizational analysis. As the skills for collaborative capacity grow, it should become

apparent in the selected measures of effectiveness, assuming those metrics were chosen correctly. Examinations of the network type and network governance may also change over time, causing a re-evaluation of strategy and structure, even as lateral processes continue to improve.

As efforts proceed towards improving collaborative capacity, the organization (PM-GUN) will have to conduct periodic re-assessments to determine if the improvement plan is working, or if changes need to be made. We highly recommend additional application of the HTJ survey, which provides both qualitative and quantitative measures that can be easily compared to the benchmark surveys. In this manner, progress can be monitored and assessed.

Execution of Plan

For this portion of our study, we return to our start point, where leadership was mentioned as a key aspect of improving collaborative capacity. Once a leader makes the determination that collaboration is a requirement, it is incumbent upon that leader to plan, facilitate, and execute efforts to improve collaboration. We have endeavored to describe several of the academic models that explain the nuances of collaboration, along with a basic example of how to apply those models. The execution of the plan is in the hands of the leader.

Once this plan is put into place, periodic re-assessments become the tools used to ensure continued improvement in accordance with established goals. The choice of assessment tools and frequency is at the discretion of the organization, but the improvement of collaborative capacity is not a one-time fix, especially in light of the changes and personnel turbulence common in military organizations. Collaboration for collaboration's sake is not beneficial either; a leader must make the determination that collaboration is, in fact, required, because it is a resource-intensive endeavor that requires a well thought-out plan and cultivation. The endstate is to make collaboration a skill that is encouraged and resourced by leadership, to be called upon at will to efficiently accomplish the goals of an organization.

IV. CONCLUSION

A. SUMMARY OF ANSWERS TO RESEARCH QUESTIONS

We started our study with the following question:

“How can DoD acquisition leaders improve their collaborative capacity to improve cost, schedule and performance?”

We believe that DoD acquisition leaders can improve their collaborative capacity by analyzing their current situation, assessing stakeholders, and developing a plan of action in accordance with current research models. The results of effective collaboration should be evident in measures such as cost, performance, and schedule.

We addressed this question by showing first how a lack of collaboration can have negative effects on an organization’s ability to achieve its goals. Then, we carefully examined current research into collaborative capacity theory, along with methods of measurement and application. From this, we developed a way for leaders to use these tools to assess their current collaborative capacity and develop plans to improve it. We also posed five follow-on questions that are answered below:

1) Why should leaders choose to collaborate in the first place?

If success depends on many outside agencies that cannot be controlled directly, collaboration often proves to be worth the resources and manpower that are required. Leaders should assess up-front what other organizations they must work with, and how much control they have over those organizations. Determination of how much collaboration is required is the responsibility of the leader.

2) What is the leader’s role in collaboration?

The leader is an agent for change in an organization. If the leader determines that collaboration is necessary, he or she must promote collaboration and facilitate improvement. The five domains assessed by the HTJ survey provide an effective start

point for leader's focused actions to improve collaborative capacity. This begins with an established strategy for collaborative improvement.

3) How do acquisition leaders measure and improve their own organization's collaborative capacity?

Once the decision to improve collaborative capacity has been made, an organization must look internally at its existing collaborative capacity through the five domains of Galbraith's STAR model. The most effective and efficient way to do this is through application of the HTJ survey, with a focus on qualitative results. As an organization builds a data base of survey results, statistical methods may be used, but the qualitative assessments, including interviews and question/answer sessions provide more detailed input on the current status of collaborative capacity. The leader must also assess networks and modes of network governance to get a big picture of the environment that the organization must operate in.

4) How can acquisition leaders analyze and improve relationships with key stakeholders?

Stakeholder analysis provides leaders with a way to assess and prioritize stakeholders so that they may efficiently focus collaborative improvement efforts. Further, the determination of "key" stakeholders assists a leader in focusing on those stakeholders that have the most direct impact on mission accomplishment through shared goals. In addition to providing an internal assessment of organizational collaborative capacity, the HTJ survey can be used as a tool to assess collaborative capacity of other key stakeholders as well. The assessment of stakeholders provides focus for collaborative improvement, which is accomplished by strengthening ties through the five domains assessed by the HTJ survey. Initial surveys provide benchmarks from which improvement can be measured.

5) How can acquisition leaders manage the “stove piped” acquisition systems network?

To overcome the stovepipes inherent to the acquisition world (and many other DoD and civilian organizations), leaders must apply some initial decision criteria: Do I have adequate control, or must I depend on results from other agencies? Anything other than direct control indicates the need for some degree of collaboration, which is one of the focus areas of this study. Working to develop collaborative leadership will allow an acquisition leader to ameliorate, if not entirely overcome, the negative effect of stovepipes caused by organizational boundaries, geographic separation, and competition for dwindling defense resources. It will also likely result in a higher degree of mission accomplishment.

The model presented in this study is applicable across a wider spectrum as well. Many organizations in DoD and the business world find that direct control of external agencies (and often direct control of sub-entities within the organization itself) is extremely difficult to achieve. In short, collaboration is a necessity, and building collaborative capacity is a necessary skill.

B. AREAS FOR FURTHER RESEARCH

This study collected applicable research, constructed a model for building collaborative capacity, and showed how the model worked through a sample application at a Project Management Office. Further research might include the following areas:

1. Apply the model at an actual Project Office that is willing to use the model to improve collaborative capacity, and measure overall effects as seen in cost, schedule, and performance of programs. This builds credibility in the effectiveness of the model described in this paper.
2. Statistically analyze HTJ survey results across a wide spread of similar organizations (e.g., several Program Offices similar in size and mission) to ascertain effectiveness of the HTJ survey using controlled data. This builds credibility in the effectiveness of the HTJ survey at identifying barriers to

collaborative capacity at a specific type of organization, and may show correlation between types of offices, leadership, and collaborative capacity.

3. Apply the model at an office other than a Project Office. This would demonstrate the applicability of the model across different types of organizations.

APPENDIX. EXAMPLE OF INTER-ORGANIZATIONAL COLLABORATIVE CAPACITY WORKSHEET

Measurement of collaborative capacity should be done in both a quantitative and qualitative way, so that later, when it comes time to plan how to improve collaborative capacity, in step two of our model, there is a baseline measurement from which to measure. We use the worksheet and survey format from the essay, “*Building Collaborative Capacity: An Innovative Strategy for Homeland Security Preparedness*” by Hocevar, Thomas, and Jansen (2006) to provide us with a means to quantitatively and qualitatively assess and analyze collaborative capacity. A blank survey is provided below in order to show what data is assessed and analyzed in step one of our model.

An aggregation of data from multiple workers and at multiple levels will improve the data, as opposed to a small sample taken at only one level within the organization. It is worth noting that the following worksheet focuses on one’s own organization (internally), but this worksheet can be easily modified to assess collaborative capacity with regards to an outside key stakeholder organization. A cost benefit analysis should be done to assess the merits of a lengthy and detailed assessment of collaborative capacity against the resources needed to conduct such an assessment.

The blank worksheet is provided here in order for the reader to understand one method of quantitatively and qualitatively measuring collaborative capacity.

Example of Survey Used in Measuring Collaborative capacity

Instructions

For each factor in the worksheet below, circle a number on the scale indicating the degree to which the description on the left fits your organization. The scale is as follows:

- 1. Strongly disagree*
- 2. Disagree*
- 3. Slightly disagree*
- 4. Slightly agree*
- 5. Agree*
- 6. Strongly agree*
- ? I don't know*

PM Gun, PM AG ICC Survey

<u>STRATEGY & PURPOSE</u>						
Need to Collaborate	Strongly Disagree					Strongly Agree
1. My organization recognizes the importance of working with other organizations to achieve its mission.	1	2	3	4	5	6
2. There is agreement within my organization about the purpose and value of inter-organizational collaboration.	1	2	3	4	5	6
Strategic Action for Collaboration						
3. We have clear goals for inter-organizational collaboration.	1	2	3	4	5	6
4. Leaders of my organization work productively with those of other organizations to improve our collaborations.	1	2	3	4	5	6
Resource Investment in Collaboration						
5. My organization has committed adequate budget and resources to inter-organizational collaboration.	1	2	3	4	5	6
<u>STRUCTURE</u>						
Structural Flexibility						

6. My organization's procedures are flexible and responsive to the requirements of other organizations.	1 2 3 4 5 6
7. My organization is willing to adjust policies and processes to improve collaboration.	1 2 3 4 5 6
Metrics for Collaboration	
8. My organization has measurement criteria to evaluate the outcomes of inter-organizational collaboration.	1 2 3 4 5 6
Structuring Individual Collaboration Efforts	
9. My organization gives people the authority they need to effectively collaborate with other organizations.	1 2 3 4 5 6
10. People in my organization are given clear guidance on goals and constraints for their inter-organizational work.	1 2 3 4 5 6
Collaboration Structures	
11. My organization has adequate and appropriate structures (e.g., liaison roles, teams, task forces) for effective inter-organizational collaboration.	1 2 3 4 5 6
12. My organization has clear and specific agreements about individuals' roles and responsibilities for inter-organizational collaboration.	1 2 3 4 5 6
<u>LATERAL MECHANISMS</u>	
Information Sharing	
13. Members of my organization willingly share information with other organizations.	1 2 3 4 5 6
14. My organization has adequate access to needed information from other organizations.	1 2 3 4 5 6
Social Capital	
15. Members of my organization know who to contact in other organizations to get information or share information.	1 2 3 4 5 6
16. Members in my organization take the initiative to build relationships with their counterparts in other organizations.	1 2 3 4 5 6
Collaborative Tools and Technologies	
17. My organization has necessary information systems' interoperability to enable effective inter-organizational collaboration.	1 2 3 4 5 6

18. Our inter-organizational collaborations are supported by effective communication tools and technologies.	1 2 3 4 5 6
Collaborative Learning	
19. My organization works with other organizations to identify lessons learned for improved collaboration.	1 2 3 4 5 6
20. My organization understands other organizations' capabilities and interests.	1 2 3 4 5 6
<u>REWARDS AND INCENTIVES</u>	
21. My organization rewards members for their successful inter-organizational collaborative activities.	1 2 3 4 5 6
22. Collaborative talents and achievements are considered when people are reviewed for promotion.	1 2 3 4 5 6
<u>PEOPLE</u>	
Individual Collaborative Capabilities	
23. Members of my organization appreciate other organizations' perspectives on a problem or course of action.	1 2 3 4 5 6
24. Members of my organization are willing to engage in a shared decision making process with other organizations.	1 2 3 4 5 6
Barriers (These items will be reverse coded for comparability.)	
25. My organization's unique requirements make collaboration difficult.	1 2 3 4 5 6
26. Conflicting organizational policies make collaboration difficult.	1 2 3 4 5 6
27. A history of competition and conflict affects our inter-organizational capability.	1 2 3 4 5 6
28. People tend to be suspicious and distrustful of their counterparts in other organizations.	1 2 3 4 5 6

The results of the above survey or the survey used by Kirschman and Laporte's An Assessment of Collaboration Capacity of Three Organizations within Defense Acquisition. (LaPorte, 2008, pp. 65-75) should be analyzed using standard statistical methods. The analyzed results of this survey should give leadership a good idea of where

collaboration issues are strong and where there is room for improvement. Factors identified through this survey should then be used as a baseline in step two- planning collaborative capacity improvement.

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